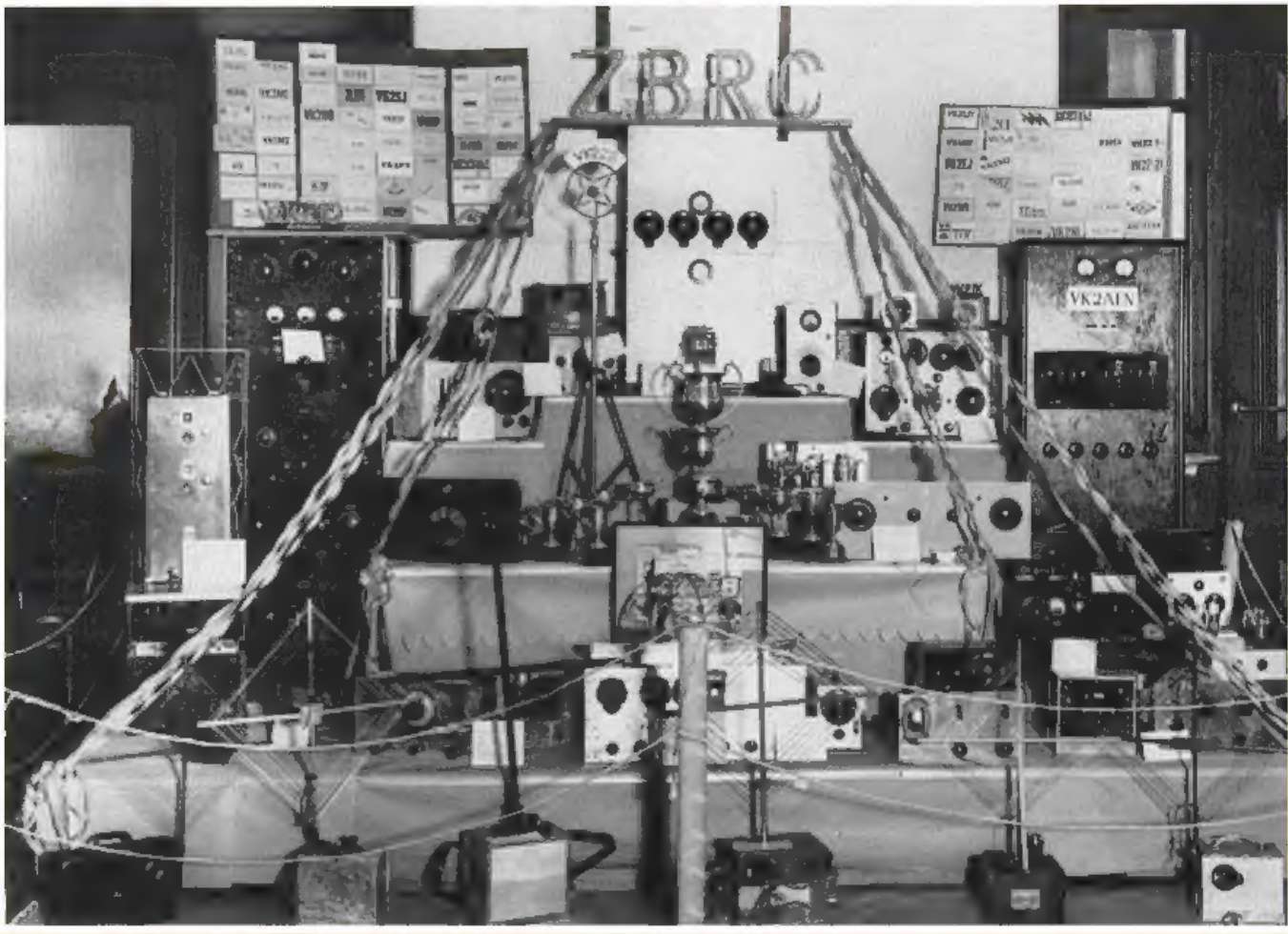
amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA



VOL. 46, No. 11 NOVEMBER 1978

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COVER PHOTO

During the mid-1930s, radio exhibitions were held in Sydney Town Hall. The display shown in this photo was exhibited by the Zero Beat Radio Club of Sydney, VK2ZB, in 1937 — 41 years ago.

Photo Courtesy Arthur Brown VK2IK

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HAM RADIO SUPPLIERS

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SPECIFICATIONS:

Transistors, 13; channel number, 3, on 28 MHz Citizens Band; transmitter frequency tolerance, ±0.005 per cent; RF input power, 1 Watt; tone call frequency, 2000 Hz; receiver type, superheterodyne; receiver sensitivity, 0.7 uV at 10 dB S/N; selectivity, 45 dB at ±10 kHz; IF frequency, 455 kHz; audio output, 500 mW to external speaker jack; power supply, 8 UM-3 (penlite battery); current drain, transmitter — 120-220 mA, receiver — 20-130 mA; accessory, shoulder strap, battery UM-3, 8pcs, instruction manual.

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BNC Plugs	$1.95
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Belling Lee Plugs	75c
Belling Lee Sockets	50c
Belling Lee Joiner	85c

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amateur radio

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PO Box 2611W, GPO Melb., 3001

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QSP — "STATE OF THE ART — HERE AND THERE"

"STATE OF THE ART — HERE AND THERE"

By this time next year, hopefully Project ASERT will be gaining the interest of many people — not only radio amateurs.

For those of you who don't already know, Project ASERT, "Amateur Service Experiment in Radio Transmission", is a WIA backed VHF/UHF propagation experiment which will tell us more about the vagaries of our bands. See AR September, page 48, for more detail.

A small working group has been established under Bob Arnold VK3ZBB as chairman. Initially the group sees a low scale pilot system in operation making use of existing amateur 2m beacons, and to some extent available equipment. The pilot study will enable the system requirement and performance specifications to be refined so that the project can be initiated hopefully Australia-wide during 1979 — the year of predicted sunspot maxima.

As results come to hand, it is anticipated that they will be published in Amateur Radio. I am sure that the outcome of this experiment will be of great interest to many.

However, while we in Australia think about sophisticated propagation experiments and operate with accepted high quality equipment, have we ever stopped to think as to what the state of the art is with some of our neighbours in Region 3.

A paper from New Zealand to be presented at the IARU Region 3 Conference in Bangkok during October raises some very valid points, amongst them is whether amateur radio can survive and expand as we know it in the major part of the Region.

The point is made that many countries within Region 3 have such poor economies that it would be impossible for many would-be amateurs to purchase even the cheapest of commercial equipment. For many even the cost of components would be a major problem.

To support this point of view, the per capita Gross National Product is quoted (1976 US dollars) for many Region 3 countries, e.g. Australia 5,330, Indonesia 170, Malaysia 680, Thailand 310, Cambodia 70, Tonga 300, India 140; and for comparison France 5,440, UK 3,590, USA 6,670.

These figures should not be construed to be average incomes, they do, however, provide a relative indication of the wealth of each country and therefore some idea of the ability of individuals to participate in a hobby such as amateur radio.

As pointed out in the paper, perhaps the only way in which amateur radio is likely to develop in such countries is on a modest scale with clubs, low power and the use of some of the more fundamental modes of signalling.

What do you think?

PETER WOLFENDEN VK3ZPA, Executive Vice-President. ■

QSP

STOP PRESS

6 MX DX

ON MONDAY 16-10-78, BERT KH6EQI IN HAWAII WAS WORKED ON 6 METRES BY PHIL VK2YDY AND KERRY VK2BXT ON SSB, AND BY DAVID VK5KK AND ERIC VK5LP ON CW. SIGS. PEAKING 599 IN STH. AUST. — TIME 1000Z.
IT IS THE FIRST TIME IN 20 YEARS AN EVENT SUCH AS THIS HAS OCCURRED. — VK5LP

CQ-TV AWARD

CQ-TV for July 1979 announced the first CQ-TV award was made to VK7EM of Penguin. This was achieved with 30 contacts, the shortest distance QSO being over a path of 384 km and the longest 550 km.

THE A. G. PITHER AWARD

Announced by the IREE in Monitor for August 1978 is the A. G. Pither Award, open to anyone who has made outstanding technical and administrative contributions to the field of communications or electronics in Australia. The improved overall welfare of individuals resulting from this work would be an important factor in selecting the recipient. This annual award honours the late George Pither VK3VX, a member of the WIA Federal Executive from 1957 to 1971.

ACRC ANNIVERSARY

On the 26th August 1978 the Amateur and Citizens Radio Club (NSW) celebrated the completion of their first twelve months of operation with a noon to midnight party. The club now has 80 members and conducts a monthly net on 80m at 7.30 p.m. EAST on the first Saturday in the month. Fifteen members passed the last Novice examination — 30 members now hold licences.

THE RON WILKINSON ACHIEVEMENT AWARD

A reminder is given that nominations for the Ron Wilkinson Achievement Award for the year 1978 will soon be due. Please refer to AR for March 1978, page 17. ■

WIANEWS

HANDBOOK REVISION

The revision of the Handbook, suggested by the Institute several times recently, should await the outcome of WARC 79 and the new legislation (long promised, but still not yet in sight) to replace the old Wireless Telegraphy Act.

However, the P. and T. Department has the requirement to begin the revision as soon as the staff situation in central office permits. The revision will therefore be based on the existing legislation.

The Executive have twice previously carried out or commissioned this revision, once by Jack Martin VK5EJ, when he was a member of the Executive some 4 to 5 years ago and a year or two later by Geoff Taylor VK5TY. A considerable number of changes have occurred since then. Not the last of the changes being Novice Licensing. A number of further changes are still in the pipeline as readers of this column will be aware.

The Executive is faced with a massive effort directed towards WARC 79 and consequently the number of amateurs is extremely limited with experience in this kind of work coupled with a continuing knowledge of all the changes which have taken place in recent years (including Institute policy). The Institute has fortunately persuaded George Brzotowski VK1GB, who has special knowledge in this field, to undertake this task with assistance from experienced amateurs of VK1 Division.

SPECIAL FUND

At the last Executive meeting it was decided to establish a Satellites and Special Projects Fund. The Fund will incorporate monies already earmarked for "Project Australis" and will have additional sums added to it from time to time. From this Fund will derive initial financial assistance for Project ASERT, as well as such other projects, including satellites, as may qualify in the future.

CHANNEL 5A

Material for the preparation of a technical submission to the Minister has not yet been sent in to Executive by such Divisions as have something to offer. Meanwhile the Minister for Post and Telecommunications issued a media release 78/18 in mid-September which, for the record, is reproduced below.

Minister for Post and Telecommunications — **Parliament House, Canberra, A.C.T. 2600**
78/18

GO AHEAD FOR ETHNIC TELEVISION

Special television services for ethnic communities will begin operating in Australia on a national basis early next year.

"This was announced today in a joint statement by the Minister for Immigration and Ethnic Affairs, Mr. Michael MacKellar, and the Minister for Post and Telecommunications, Mr. Tony Staley.

DECEMBER AR

This year the December issue of AR will be larger than usual as has been the practice for the last two years. It will contain several specially selected Novice oriented articles.

Although we are calling December's Amateur Radio our "Novice Issue", there will be the normal departments and technical and general articles to cater for all tastes.

The Publications Committee hopes that our "Novice Issue" will be one to be remembered for some time, and is therefore arranging for a limited number of extra copies to be printed.

These extra copies will be available from various electronics commercial outlets, or from the WIA Federal Office, PO Box 150, Toorak, Vic. 3142.

The price for our "Novice Issue" is $1.20 (plus 50c if posted), the increased price being due to the greater number of pages and to help offset the printing costs.

WIA members and subscribers will of course receive their copy free as usual.

Our current circulation has now reached 7,000 (guaranteed circulation), and next year also looks promising.

If you wish to secure and extra copy of the December "Novice Issue" of Amateur Radio (it would also make an ideal Christmas gift to a CBer) please remit $1.70 (includes posting) to the WIA, PO Box 150, Toorak, Vic. 3142, as soon as possible.

VK3UV. ■

WIRELESS INSTITUTE OF AUSTRALIA

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Federal Council:
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VK2 Mr. T. I. Mills VK2ZTM
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VK6 Mr. N. R. Penfold VK6NE
VK7 Mr. P. D. Frith VK7PF

Staff: Mr. P. B. Dodd VK3CIF, Secretary.
Part-time: Col. C. W. Perry, Mrs. J. M. Seddon and Mr. P. Simmons (AR advertising).

Executive Office: P.O. Box 150, Toorak, Vic., 3142. 2/517 Toorak Rd., Toorak, Ph. (03) 24 6652.

Divisional information (all broadcasts are on Sundays unless otherwise stated):

ACT:
President — Mr. E. W. Howell VK1TH
Secretary — Mr. Ted Radclyffe VK1TR
Broadcasts— 3570 kHz & 146.5 MHz: 10.00Z.

NSW:
President — Mr. D. S. Thompson VK2BDT
Secretary — Mr. T. I. Mills VK2ZTM
Broadcasts— 1825, 3595, 7146 kHz, 28.47, 52.1, 52.525, 144.1, Ch. 8 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 6).

VIC.:
President — Mr. E. J. Buggee VK3ZZN
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts— 1825, 3600, 7135 kHz — also on 6m, 2m SSB and 2m Ch. 2 repeater: 00.30Z.

QLD.:
President — Mr. A. J. Aarsse VK4OA
Secretary — Mr. W. L. Gielis VK4ABG
Broadcasts— 1825, 3580, 7146, 14342, 21175, 28400, kHz; 2m (Ch. 42, 48): 09.00 EST.

SA:
President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts— 1820, 3550, 7095, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

WA:
President — Mr. L. A. Ball VK6AN
Secretary — Mr. P. Savage VK6NCP
Broadcasts— 3600, 7080, 14100, 14175 kHz, 52.656 and 2m (Ch. 2): 01.30Z.

TAS.:
President — Mr. I. Nicholls VK7ZZ
Secretary — Mr. M. Hennessy VK7MC
Broadcasts— 3570, 7130 kHz: 09.30 EST.

NT:
President — Dick Klose VK8ZDK
Vice-Pres. — Barry Burns VK8DI
Secretary — Graeme Challinor VK8GG
Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal information:
VK1 — P.O. Box 46, Canberra, 2600.
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Sat 10.00-12.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. BOX 37317, Winnellie, N.T., 5789.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VK QSL BUREAUX

The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

VK1 — QSL Officer, G.P.O. Box 1173, Canberra, A.C.T. 2601.
VK2 — QSL Bureau, C/- Hunter Branch, P.O. Teralba, N.S.W. 2284.
VK3 — Inwards QSL Bureau, Mr. E. Trebilcock, 340 Gillies Street, Thornbury, Vic. 3071.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001.
VK5 — QSL Bureau, Mr. Geo. Luxon VK5RX, 203 Belair Road, Torrens Park, S.A. 5062.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 37317, Winnellie, N.T., 5789.
VK9, 0 — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

They said that the Government had made arrangements to provide for multi-cultural television services in line with its commitment to ethnic communities.

The permanent service would be administered by the Special Broadcasting Service in consultation with the Ethnic Broadcasting Advisory Committees. It would use channels within the Ultra High Frequency (UHF) band. Installation costs of the UHF transmitters would be borne by the Government, the Ministers said.

The joint statement advised that the Government had agreed to the establishment of a temporary service from early next year because it would take some time to set up the permanent service. It said that the temporary service would use facilities of the Australian Broadcasting Commission.

The Ministers said that the responsibility for administration of the temporary service, like the permanent service, would be vested in the SBS. The SBS had negotiated an agreement with the ABC whereby ABC facilities could be used to transmit programs as an interim measure.

This would provide practical experience of multi-cultural programs which would be invaluable in the final decision-making on the form the permanent service would take. It would also assist as a basis for consultation on the types of programming suitable in the long-term development of a multi-cultural, multi-lingual television service.

The SBS, in conjunction with NEBAC, would co-ordinate the preparation of a public discussion paper on needs, programs and structural and administrative options for the permanent "special purpose" television service.

The Ministers said that the SBS would be the responsible authority for financing the new service. The SBS would be able to purchase or commission programs from independent production houses and other programs makers in both Australia and overseas.

It is expected that the permanent service, to be administered by the SBS, would be transmitting in 1980.
Canberra, 20 September 1978."

WICEN

The Executive noted that in some States the Department refused to permit WICEN operators to set up training exercises in conjunction with suitable local events. This had already been discussed at the last Joint Committee meeting but will now be taken up more strongly.

NEW RB FORM

Rumblings have been heard from time to time about Institute SWL members facing problems with the possession of receivers. From Queensland comes news of a new form RB381 entitled "Application to hold transceiver while undertaking AOCP studies". The applicant is required to nominate a licensed full or limited amateur operator or amateur club to act as guarantor and to have custody of all transmitting valves removed from the transceiver. In the case of solid state finals these must be effectively immobilised.

Readers will remember the printed inserts into AR for December last year and January 1978 relating to policing the frequency spectrum and controls over transmitting equipment.

As far as is known these new forms RB381 are in use only in Queensland.

WARC 79 FUND

A circular was due for mailing out early in October to all known non-members soliciting donations towards the expenses of WIA representatives for WARC 79. Since the address labels for these non-members derive from the WIA computer file it is hoped this will also assist with updating the file in preparation for the 1979 Call Book.

EMC

Early in October the Minister for Post and Telecommunications will be holding a meeting in Sydney to discuss informally measures which might be adopted to improve the immunity of consumer electronic equipment to interference from radio transmitting sources. The WIA received an invitation to attend and is to be represented by Mr Tim Mills, VK2 Federal Councillor. ■

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Our shop is in a very suitable location and elegant environment. It is in reach of most Sydney customers. We have a large showroom and instant service available.
We do carry all TRIO KENWOOD SPARES. Parking is available at two large Council parking areas also, a rear loading dock also provided so please come up and visit us. Of course the LOFTUS WAREHOUSE and service is continuing as usual. Mail orders may now be placed at either shop.
The new CROWS NEST address is SHOP 9 ROSE & McLEOD PLAZA 477-479 PACIFIC HIGHWAY, CROWS NEST 2065 opposite the old CROWS NEST PICTURE THEATRE, easy walking distance from the W.I.A.
I hope to see you soon to see the latest from TRIO KENWOOD the world's largest manufacturer of Amateur equipment.

KENWOOD AMATEUR RADIO

Yours sincerely,
P. M. SCULZ.
PROPRIETOR.

TS-820	H.F. Transceiver
TS-820S	H.F. Transceiver with DG-1
DG-1	Digital Display
VFO-820	VFO for TS-820
SP-820	Speaker for 820
BS-8	Pan Display for TS820/820S
DS-1A	DC Converter for TS820/820S TS520S
YG-88C	Crystal Filter
R-820	Communications Receiver
YG-88A	AM Crystal Filter for R800
YG-445C	C.W. Crystal Filter for R820 (500 HZ)
YG-445CN	Narrow C.W. Crystal Filter for R820 (250 HZ)
TS-520S	H.F. Transceiver
VFO-520S	VFO for TS-520S
SP-520	Speaker for 520
YG-3395C	Crystal Filter
BS-5	Pan Display for TS520/TS520S
DG-5	Digital Display and Frequency Counter
DK-520	Digital Adaptor Kit (connects old TS-520 to DG5)
TV-502S	2 m Transverter for 520 & 820
TV-506	6 m Transverter for 520 & 820
TS-600	6 Metre all Mode Transceiver
TS-700	2 Metre all Mode Transceiver
TS-700S	2 Metre all Mode Transceiver
TS-700SP	2 Metre all Mode Transceiver
VOX-3	VOX Unit for TS-700
SP-70	Speaker for TX-700
VFO-700S	Remote VFO for TS-700SP
AT-200	Antenna Tuner
TR-2200A	2 Metre FM Portable
VB-2200A	Power Booster for TR2200A
MB1A	Mtg. Bracket for 2200
TR-7200	2 Metre FM Mobile
TR-7200G	2 Metre FM Mobile
VFO-30G	VFO for TR-7200 Crystals for TR-2200 and 7200 (Pair)
TR-7010	2 Metre SSB Mobile
TR-3200	70 cm FM Portable
TR-7400A	2 Metre Digital Mobile (800 Ch 25W)
TR-7500	2 Metre Transceiver (100 Ch 10W)
RS-6	AC Power Supply for TR-7500
PS-8	AC Power Supply for TR-7400A
R-300	Communications Receiver
MC-50 *	Desk Microphone 500
MC-10 *	Hand Microphone 50K
MC-35S *	Hand Microphone 50K
HC-2 *	Ham Clock
MC-30S *	Hand Microphone 500
HS-5 *	Headphones
HS-4 *	Headphones
LF-30A	Low pass Filter
SM-220	Station Monitor
TL-922	Linear Amplifier (2KW PEP)

KENWOOD

AUDIO FREQUENCY SHIFT KEYING GENERATOR FOR RTTY

Ian Hunt VK5QX

Following is a simple but extremely effective circuit of an AFSK generator for radioteletype use. The circuit was designed by Ron VK5FY, and has been used in various shacks around Adelaide with most satisfactory results. It is based on the XR 205 IC produced by "Exar" which is readily available through most components services.

In the configuration shown in Fig. 1, the circuit is used in conjunction with a UART system and requires a logic signal at normal TTL levels applied to the base of the transitor via the 1 k resistor to provide the mark/space coding. The 2295 Hz frequency was chosen for the Mark signal in this instance, as being convenient in the overall set-up used.

Operation of the circuit can be very briefly explained by regarding the transistor as a simple switch, which merely switchas the configuration of the voltage divider across the IC control pin, pin 13, thus varying the output frequency from the device.

The actual voltage applied to the IC are set by the potentiometers as shown. The 5 k pot, between pins 7 and 8, is adjusted to provide a triangular waveform at the output in one direction, and a square wave in the other. Whilst this may appear to be a compromise adjustment in practice it works in fine fashion. The adjustment should be made with the equipment connected up in normal fashion with the waveform being observed on an oscilloscope. The output side of the 10 uF capacitor from pin 11 makes a good monitoring point.

In fact I work with an oscilloscope constantly monitoring this point whilst in operation which also allows me to see that the AFSK signal going to the transmitter is functioning correctly.

Resistors used are ¼W, but the 0.18 capacitor across pins 14 and 15 should be of good quality. I have built this circuit up several times now, and each time it has worked without any problems. I can thus recommend its use. It is also possible to easily adapt the circuit for other frequency shifts apart from 170 Hz, should you so desire.

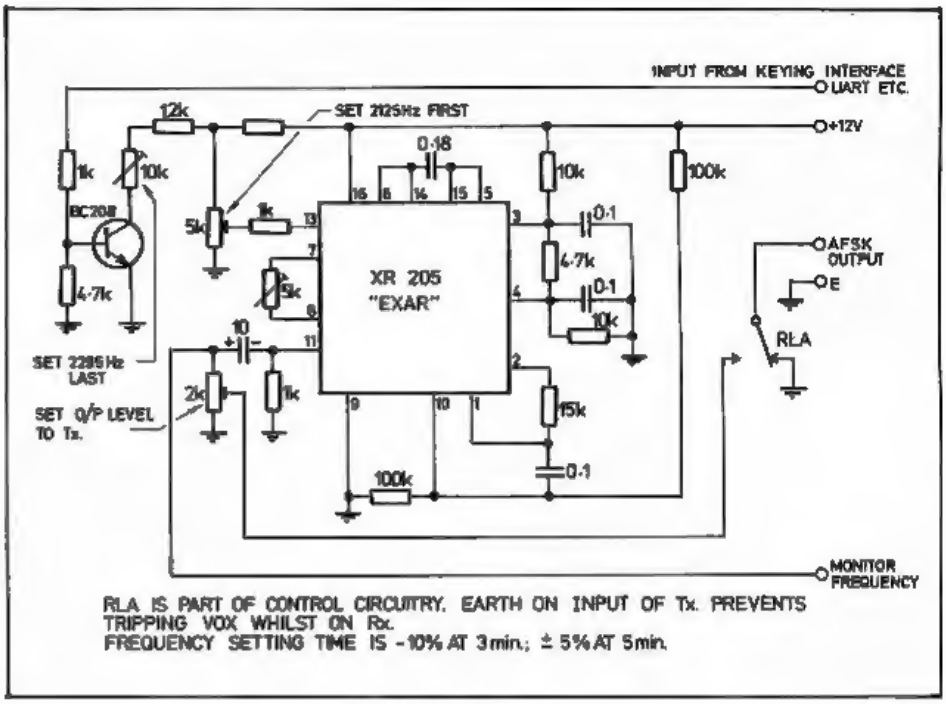

FIG. 1: AFSK Generator.

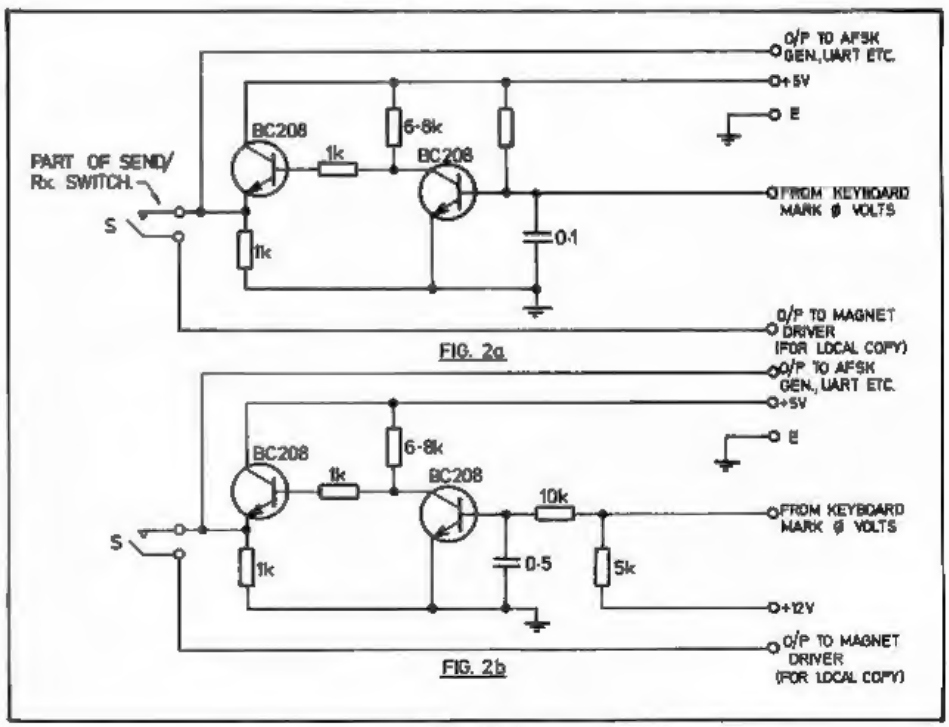

FIG. 2(a.).
FIG. 2(b): Keyboard Translators.

KEYBOARD TRANSLATOR FOR RTTY

For use in conjunction with the AFSK generator previously described here is a simple circuit of a keyboard translator which can be used with most teleprinter keyboards.

The circuit is so simple it needs virtually no technical description (see Figs. 2a and 2b).

It is possible, if necessary, to modify the input circuitry to provide a higher switching voltage across the contacts of the keying device. This has been found advantageous when using a model 14 TD tape transmitter due to the contact system used. The transistors used can be BC 108, 2N3565 or similar. Resistors in all cases are ¼W.

SELECTOR MAGNET DRIVER

The circuit in Fig. 3 is that of a solid state magnet driver which has proved the most

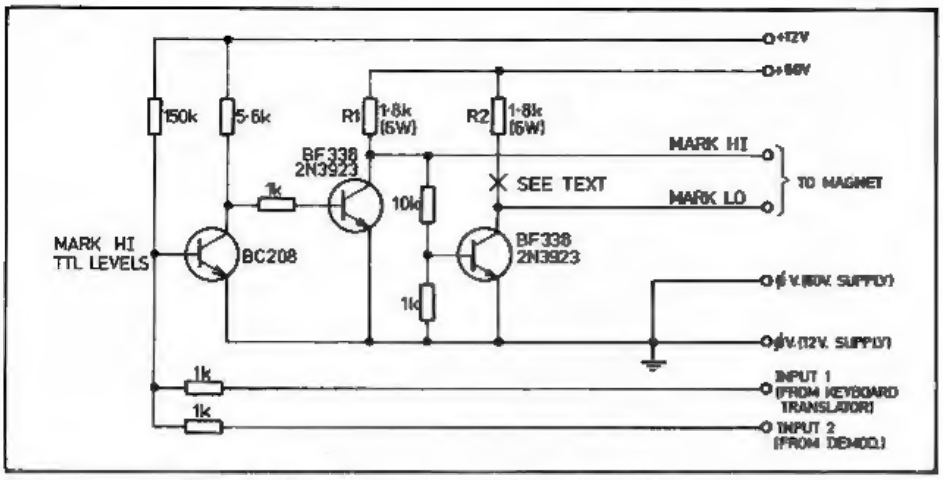

FIG. 3: Magnet Driver — (Reversing Magnet Circuit).

satisfactory. This circuit has been used with both Creed Model 7 machines in a reversing current mode and with slight modification for a Teletype Model 15/19 machine.

Operation of the circuit is virtually self-explanatory so no detailed description of how it works is provided.

The 2 inputs provided allow local copy for monitoring purposes to be fed to one input, e.g. keyboard translator through transmit/receive switching, and the other input fed from the terminal unit receive side. It is normal to also provide a reasonably large wattage variable resistor in the lines fed to the selector magnet to allow setting of the total current passed through the magnet. A mA meter is usually also placed in series with the line and left in circuit.

The 6W resistors are vitreous enamel, and should be mounted in such a manner as to allow suitable cooling to take place as they can become fairly warm with prolonged operation. All other resistors are ¼W. The driver transistors are a high voltage type but should be readily available from your usual supplier.

For single current working (model 15/19, etc.) the selector magnet is inserted at point X in the circuit (Fig. 3), together with adjusting pot and meter; it may be desirable to vary the values of R1/R2 as necessary. For model 15, etc., the supply voltage should be approximately 110V in lieu of 60V. ■

SIMPLE THREE-SHIFT ST-5 OR ST-6 DEMODULATOR

Dr. Ken Kelly VK2MJ
9 Hill Street, Merimbula, NSW 2548

Modern ham HF operating on RTTY uses 170 Hz shift almost universally, and as a result there is little need to provide capability for receiving other shifts. However, it is useful to be able to receive on other shifts when tuning to commercial stations.

The original ST-6 described a separate filter for this purpose, with a separate space tone filter, and also a separate bandpass filter at the front end. However, unless one is interested in obtaining optimum copy on very weak signals from the commercials, this is unnecessary. I have installed one switch which allows optimum conditions for 170 Hz shift, and allows copy of other shifts commonly used — 425 Hz and 850 Hz. The bandpass filter of the ST-6 used for the 170 Hz operation is bypassed for the higher shifts; of course the ST-5 does not have the bandpass filter.

Fig. 1 shows the basic discriminator circuit normally used in both of these demodulators. It will be noted that C2, which tunes the space tone, is normally about a value of .056 uF. Referring now to Fig. 2, it will be seen that C2 has been replaced by C2a, which tunes the coil to 2975 Hz, giving a shift of 850 Hz. Value for C2a is about .033 uF.

An extra switch has been added to select the required shift. This switch is one of the miniature type, which is a double throw type, but has a central position also where the pole is not connected to either side. For the ST-5, any single pole type will suffice, but for the ST-6 a second pole is needed for the relay which bypasses the bandpass filter.

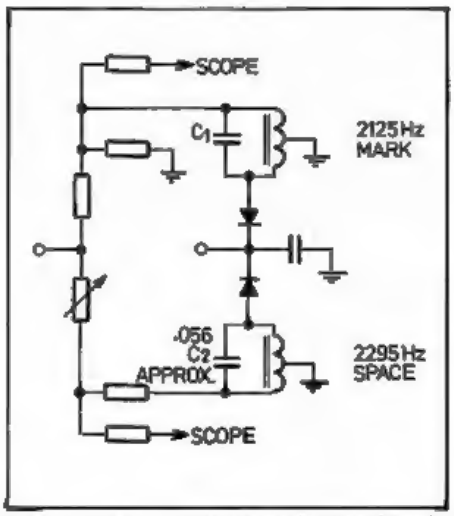

FIG. 1: ST5 and ST6 Demodulator Circuit.

After C2a has been installed, and the filter tuned to 2975 Hz, C2b, which should be approximately .022 uF, is installed, and with the switch turned to the 170 Hz position, C2b is adjusted to tune the coil to 2295 Hz. Finally, the switch is turned to the 425 Hz position, and C2c is installed and adjusted to give a frequency of 2550 Hz. The value of C2c will be about 0.22 uF. (Calculation shows a value of 0.012 uF.—Tech. Ed.) In my case I mounted it directly in the switch.

When receiving shifts of other than 170 Hz on the ST-6 it will be necessary to bypass the bandpass filter. This is done with a relay, which is a miniature double pole double throw type, and is controlled

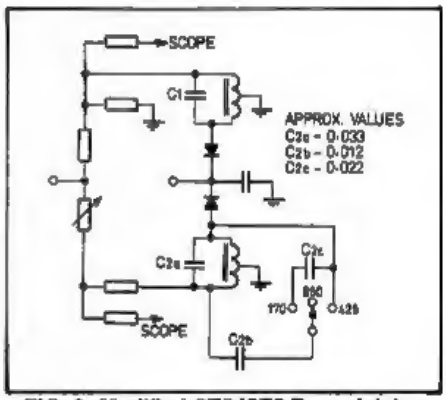

FIG. 2: Modified ST5/ST6 Demodulator Circuit.

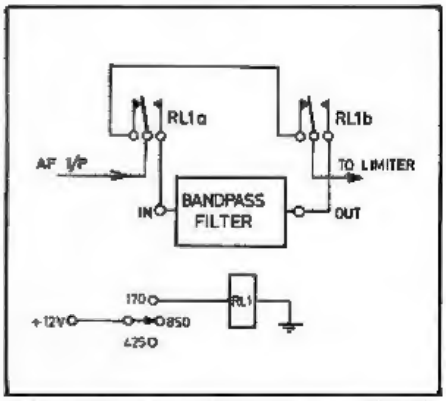

FIG. 3: Bandpass Filter Bypass Circuit.

by the other pole of the shift selection switch. Fig. 3 shows how this is done.

This has made a simple and useful addition to my demodulator. ■

MODIFICATIONS TO THE FT101 TO CURE STRONG SIGNAL OVERLOAD

C. J. Donoghue ZL2BAF

There must be thousands of the Yaesu FT101 series transceivers in Australia. Some of these suffer from overloading and cross-modulation. ZL2BAF has analysed the problem and devised an effective cure. Even if you do not own an FT101 there is food for thought in this article.

About three years ago I purchased a brand new FT101B, and shortly afterwards became aware that the receiver, while excellent in most other respects, exhibited bad overloading on any signal stronger than S9. Local signals were so distorted as to be unreadable without switching in the RF attenuator and backing off the RF gain, desensitizing the receiver to the extent that weaker signals would not be heard. Discussions on 80 metres with other 101 owners revealed that this was a common complaint, and one or two other amateurs said that they had been put off buying a 101 because of this problem.

Considering the evidence gathered over a period from these contacts, I came to the conclusion that what I had thought was a fault in my set was in fact a design fault which showed up in varying degrees of severity in a large percentage of sets, including the 101 Mk. 11, 101B and 101E.

There was one other problem which showed up at times, and proved to be due to the same cause of the overloading, that of cross-modulation, and apparent splatter from local stations on the same band.

I decided to investigate the overload problem in my 101, and started by feeding in an AM signal from the signal generator, modulated about 80 per cent with 400 Hz, at 37,000 kHz. A dual-trace scope was connected to show the IF envelope on one trace, and the audio wave-form from the detector on the other, and a VTVM was connected to the AGC rail. As the RF input was increasing, a point was reached about 10 dB over S9 (200 micro-volts in) where the modulation percentage on the IF envelope increased rapidly, and further increasing the input caused the modulation percentage to increase to more than 100 per cent, accompanied by the onset of audio distortion.

The VTVM read about 5 volts on the AGC rail at this stage. An RF probe connected to a signal tracer was then used to find the stage causing the distortion, which proved to be Q2, 2SC784R on circuit board PE1183B IF Unit.

At this point it would probably help if a description of the operation of the 101 RF, IF, and AGC circuits was given. The RF stage is a dual gate FET, with the incoming signal applied to gate 1, and AGC via a resistive divider (100k and 68k) applied to gate 2. The signal passes to the 1st mixer, another FET, where it is heterodyned to the 1st IF, which is broadbanded to cover 5.5 to 6.0 MHz. The output from the 1st IF is passed to the second mixer, another FET, where it is heterodyned to 3,180 kHz, by the VFO, which tunes 8.7 to 9.2 MHz. The next stage is the input to the noise-blanker, this time a bi-polar transistor, then via the noise gate to another FET, the noise-blanker output, and on to yet another FET connected as a source follower to provide a low-impedance drive for the crystal filter. The output from the crystal filter passes to another bi-polar transistor (Q2 mentioned earlier), and then finally to an integrated circuit, CA3053, which drives the demodulators.

The IF voltage appearing across the last IF transformer is rectified to produce a positive voltage which is used to drive two transistors connected as a Darlington pair (Q4 and Q5 on the IF board). The AGC rail is supplied through a 3k3 resistor from a 10 volt zener diode, and the

transistors Q4 and Q5 are also connected to the AGC rail, thus causing the AGC voltage to vary from about 8 volts with no signal to about 4.5 to 5 volts with an S9 signal. The increasing current through Q4 and Q5 with signal is used to drive the S-meter.

Of the eight stages of amplification, three are controlled by the AGC, the RF stage, the last IF IC, CA3053, and the transistor Q2 2SC784R immediately before the CA3053.

A perusal of the published data for both the RF FET and the CA3053 indicated that AGC voltage excursions as provided by the 101 AGC rail were well within the specifications, except that the control on the RF stage could be somewhat greater to reduce the gain more on strong signals. Q2, however, was the stage with the problem, and a study of its AGC biassing showed the reason. Since Q2 is a bi-polar transistor, its base requires forward bias, and this is obtained from the AGC rail through the usual divider resistors, in this case a 27k and a 3k9. In the 101E the upper resistor is a 22k. As the AGC voltage drops with increasing signal, the bias applied to the transistor decreases, lowering the gain of the stage. However, the transistor is a silicon device, and requires at least 0.65 volts on the base with respect to the emitter to overcome the base-emitter potential drop, which means that the minimum voltage at the top of the divider must be about 5 volts. If the AGC voltage drops below this value, the transistor becomes cut off, and hence there is no output. When the incoming signal is strong enough to produce this condition, severe distortion is the result.

The first solution to present itself was to provide a small fixed bias current to the base so that it could not cut off under any conditions. This was done by fitting a resistor from the zener diode supplying the AGC rail to the base of the transistor Q2, of a value chosen to supply just enough current to prevent the transistor cutting off, the value working out at 82k. The resistor was simply fitted to the back of the board. The current thus supplied reduced the AGC action on the stage, and hence a greater AGC voltage was developed, which improved the control on the RF stage, with a vast improvement in the cross-modulation and splatter troubles. Because of the increased AGC action, the S-meter read much too high, and was reduced to read S9 on the calibrator at 14,200 kHz.

The overload troubles disappeared as well, no stations ever causing distortion even with the attenuator out and the RF gain full on. A number of 101s were modified, and all showed the same improvement.

While the modified sets worked well, it seemed that something was just not exactly right, and some further thought was given to the problem over a period of time. Some more measuring was undertaken, namely a graph of AGC volts against RF input voltage, which showed a knee in the curve at the point where the AGC voltage dropped below the point where it had control of the IF stage Q2. Any signal stronger than that was being controlled by only two stages, the RF stage, and the CA3053. While the signal required to reach that point was much stronger than that which caused the original overload in the unmodified form, it could still be reached by a local signal, and the receiver would sound rather fussed, though not actually distorting, apparently caused by a rise in the audio output since the AGC could not hold the output level.

This state of affairs led to the final modification, as follows. It was decided to remove the voltage-divider biassing completely from the IF stage Q2, and to fit current bias from the AGC rail through a 1M8 resistor, chosen to give the right collector current under no-signal conditions. This provided a linear decrease in the bias current right down to an AGC voltage of about 1 volt, in contrast to the first modification, but did not give enough gain reduction, resulting in too much AGC voltage for a given signal level, and adversely affecting the signal-to-noise performance at moderate signal levels. The decision was made to control an additional stage, previously uncontrolled, and a study of the circuit suggested Q2 in the noise-blanker circuit, another bi-polar transistor. The bias for this stage is also via a divider, 22k and 4k7, and these were removed, and, like the other, current bias was fitted, but this time using a 1M2 resistor. The S-meter was readjusted, and the performance checked out, with most gratifying results. The receiver refused to show any signs of overload right up to the full output of the signal generator, about 50 millivolts.

The most brutal test was devised, which was to modify another 101 to the same circuitry, and then both sets were fitted into their respective cars (both being mobile) and with the cars parked alongside each other, a QSO was held at full power. Although the aerials were only about eight feet apart, and the overload protection lamps on the rear of the sets were flashing brightly with the RF, the audio was clean and easy to resolve, with the RF attenuator switched out, and the RF gain full on, and the S-meter reading about 40 dB over S9.

Cross-modulation has disappeared, and the set will work happily with other local sets on the same band, unless they are very close together.

Step-by-step details of the modification are as follows: Remove the AF unit, PB1189, the second board from the left when viewed from the front of the set, by undoing the two screws and carefully rocking the board endwise while lifting it up, and lay aside. This board is removed to gain access to the IF board, PB1183B, on the extreme left of the set.

Remove the two screws holding the vertical metal shield supporting the IF board, and ease the IF board up and out of the set complete with shield.

Remove the shield.

Locate the transistor Q2 on the top edge of the board, and its base bias resistors, R10 and R11 in the 101B and 101E, and R16 and R17 in the 101 Mk. II.

Remove these resistors CAREFULLY. The board is a double-sided printed circuit with plated-through holes, so use a solder-sucker or solder wick and not too much heat. R10 and 11 are 22k and 3k9 in the 101E, 27k and 3k9 in the 101B, and R16 and 17 are 27k and 3k9 in the 101 Mk. II.

Replace R10 (R16) with a 1M8 resistor, leaving no resistor in R11 (R17), making sure that there are no specks of solder stuck on the board.

Re-assemble the IF board to the shield, and fit to the set, and fit the AF unit.

Remove the screw securing the noise-blanker board PB1162, and remove board from the set (PB1292 in the 101E and 101B). Locate the transistor Q2 in the 101 Mk II and its bias resistors R6 4k7, and and R2 22k; and remove the resistors with the same care as before. Replace R6 or R2 respectively with a 1M2 resistor, leaving no resistor in the other place. Connect the base end only for now. On the 101B and E, locate pin 3 on the edge connector, and isolate it from pin 2 by cutting the copper between them. Solder the other end of the 1M2 resistor to the pin 3, and fit the board to the set.

On the 101 Mk II, the NB board is mounted on top of the VFO unit, and connections are made by means of wires to the set. Find a suitable anchor point (fit a solder lug) and connect the AGC end of the 1M2 resistor to it, with a wire to the AGC rail under the chassis. Refit the board to the set.

Remove the bottom cover and the internal speaker panel, and locate pin 13 on the IF unit edge connector socket. This is the AGC rail. Solder a wire to pin 13, and route to the NB board edge connector socket. Isolate pin 3 from ground, and connect the AGC wire to pin 3.

Re-assemble the set.

Switch the set on and tune to 14,200 kHz, turn on the calibrator, and peak the preselector for maximum S-meter reading. Locate the S-meter adjust control on the IF board, and set the S-meter to read S9. If you care to measure the AGC voltage it should be 4.0 volts ±0.25 volt.

That completes the modification, and you should now have a receiver equal to the best.

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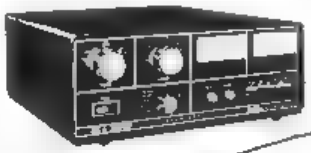

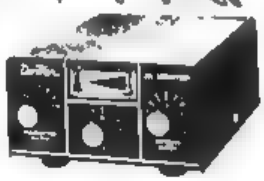

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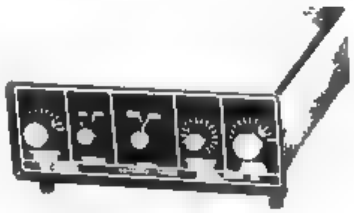

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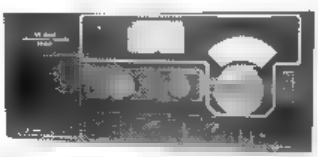

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ADDITIONAL MODIFICATIONS TO THE FT-100B

G Wilson VK3AMK
7 Norma Street, Frankston 3199

In AR March 1978, pages 10 and 11, a number of modifications to the FT-100B were described. It should be noted that in Fig. 2 the value of two capacitors shown as 0.002 uF should read 0.022 uF. Since making the earlier modifications several others have been made which have further improved the performance of the transceiver.

1. RECEIVER PRE-AMPLIFIER:
As with many transceivers the FT-100B worked very well on 80-20m, but lacked some sensitivity on 15m and was quite deaf on 10m. A broadband pre-amp. was added between the antenna relay and the receiver front-end and the improvement in sensitivity was dramatic. The circuit used has been tried in many situations where extra gain was needed ahead of a transceiver and numerous versions have all performed well. The gain is low below 20m and then increases with frequency. No band switching is required and it can be built either on PC board or tag strips. To improve stability keep the input components as far from the output as possible Despite the apparent simplicity of the circuit there have been no serious problems even with quite solid local signals. The only minor problem was Channel O TV signals getting through the pre-amp. and mixing with internal signals in later stages of the receiver. This was cured by using a low-pass filter on the antenna coax which effectively removed the TV signal before it reached the receiver.

2. INCREASED CALIBRATOR SIGNAL
In the FT-100B when the calibrator is turned on the antenna is cut off, which means the 100 kHz osc. signal doesn't have to compete with band noises to be heard. Despite this the signal was weak on 15m and all but non-existent on 10m. This was probably a combination of falling receiver sensitivity and harmonic output as the frequency went higher. As supplied, the calibrator signal is taken to the base of TR101 (RF amp.) via a diode and capacitor (C111). After fitting the pre-amp. described above the lead to C111 was removed and connected via a 68 pF capacitor to the base of the first 2N3563 in the pre-amp. This produced a much stronger 100 kHz signal on all bands on 10m, instead of no "S" meter reading at all, read almost half scale with a good strong signal making calibration on 10m much easier.

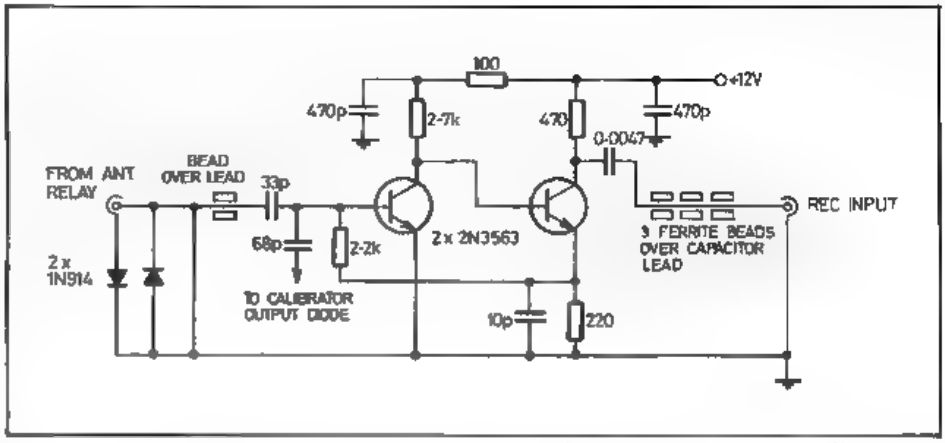


FIG. 1: Receiver Pre-amplifier.

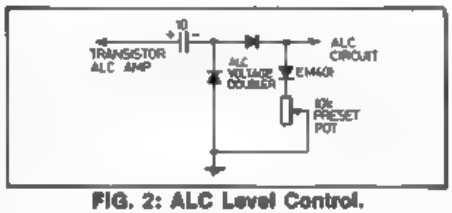


FIG. 2: ALC Level Control.

3. ALC LEVEL CONTROL
The ALC circuit in the FT-100B uses a transistor amplifier which in my opinion produces too much control voltage and prevents the 6JM6 finals from operating at full output. The relatively low power level available makes it important that the transceiver operates as well as possible, especially in difficult conditions. A diode and preset pot were added to the ALC circuit, as shown in Fig. 2, and this allowed the ALC level to be set to a more realistic position, without reaching distortion of course. The correct setting can be reached by trial and error, but a scope will give a far better indication of the linearity and how much increase can be tolerated. ■

TRY THIS

WITH THE TECHNICAL EDITORS

AN ACTIVE DX RECEIVING ANTENNA

R. Cook VK3AFW
7 Dalias Avenue 3166

The antenna is the most important element in any receiving or transmitting station For DX reception maximum performance is required at very low angles of incoming signal

A quarter wave vertical antenna gives a very good low angle performance when coupled with an effective ground system, however it is a one band device only. Multi-band verticals are available these use tuned traps to isolate sections of the antenna so as to present an equivalent quarter wave on several bands. It is not broad band; out of the amateur bands the performance is degraded.

Here is an antenna that is truly broadband, has excellent low and medium angle performance, is omni-directional, provides a signal-to-noise ratio at least equal to a resonant vertical and is compact. What is the catch? Simply that it is a receive only antenna.

An antenna that is shorter than a quarter wavelength may be considered as essentially capacitive. The equivalent circuit is shown in Figure 1.

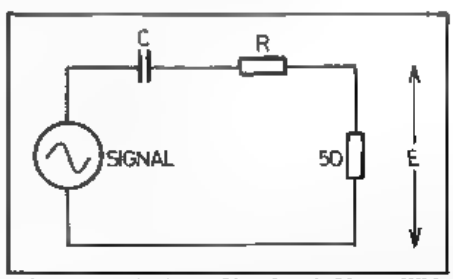


FIG. 1: Equivalent Circuit of Short Whip Antenna Connected to 50 ohm Coax.

If the antenna is fed with low loss coax and the receiver is properly matched then the antenna sees a 50 ohm load The resistance R will be small and may be ignored C will represent a sizable re-

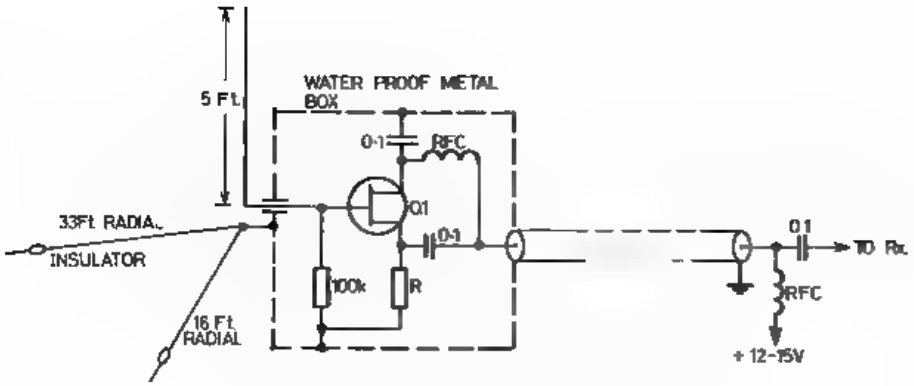


FIG. 2: Simple Active Antenna

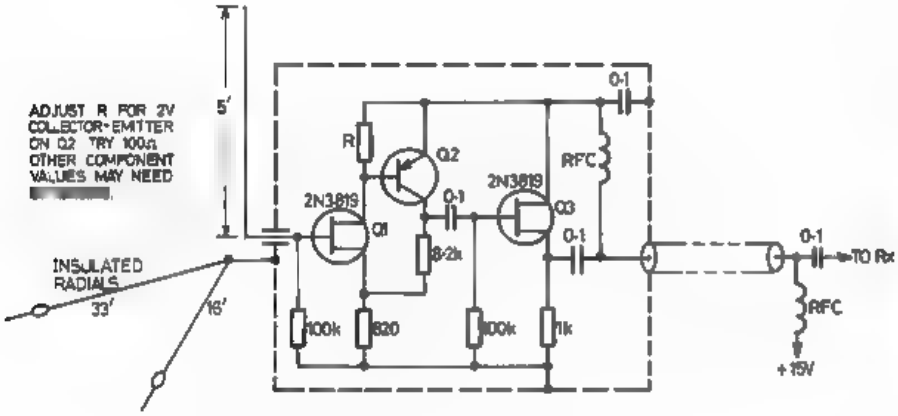


FIG. 3: Active Antenna with Gain.
Adjust R for 2V Collector-Emitter on Q2. Try 100 ohm. Other component values may need optimising.

actance which increases as frequency decreases. It will attenuate the received signal E. For example, a 1.25 metre whip will provide only about 10-15 per cent of the available signal when connected to a 50 ohm line and operated on 10 metres. On 160 metres the signal has all but vanished.

To obtain a reasonable signal-to-noise ratio a full quarter wave antenna is not necessary. As frequency is lowered so the amb ent noise level increases, thus a fixed length vertical will deliver a substantially constant signal-to-noise ratio into an open circuit.

So if a FET source follower is placed at the antenna base the maximum available signal will be passed to the receiver. A possible configuration is shown in Figure 2. The FET provides matching of the high impedance antenna to the coax over a very wide frequency range

Q1 may be any FET designed for RF amplification (2N3819, T1588, etc). R will need to be selected to suit the particular FET's characteristics. 1 k ohm would be an average starting value. The DC to operate the FET is supplied via the coax.

The vertical needs to work against a ground plane which may be a collection of radials or a nearby gutter or even a length of waterpipe on which the whip could be mounted. A car radio antenna is a convenient form of whip which may be readily mounted on a bracket on the outside wall of the shack. This antenna should work well indoors as well.

The received signal will not push the S meter up as far as a resonant antenna would but then neither will the background noise. It is the readability of the signal that counts. This antenna will outperform random wires when used over a range of frequencies. This system is used in military and commercial installations, particularly for mobile LF reception, where resonant antennas are impractical.

For those operators who want to see the S meter read higher then the circuit shown in Figure 3 will be of interest. On 28 MHz the received signals will be stronger than from a 3 element beam and almost equal to a full size vertical on 3.5 MHz!

Interested? Build one and write in about the rare DX you hear. ■

CAPRICORNIA AMATEUR RADIO FESTIVAL

The "Capricornia Amateur Radio Festival" was held in Rockhampton on the 16-17th of September, 1978, by the Central Queensland Branch of the WIA. It was very successful and well attended by amateurs and others interested in radio and electronics. A smorgasbord dinner was held on the Saturday night and the guest speaker was the Queensland Division President, John Aarsse VK4QA. Presentations were made to Les Bell VK4LZ, of North Queensland, for the first worked all Queensland Shore Award and also worked Queensland Cities Award; to Hal Hobler VK4DO and Harold Bremerman VK4HB the Certificate and Badge for Meritorious Service from the WIA.

Harold Hobler VK4DO (left) receives the WIA Certificate and Badge from Qld. President John Aarsse VK4QA for meritorious service.

The large range of amateur radio equipment displayed by Vicom included the latest new transceivers from Kenwood and Icom, together with literature giving the technical details. Relics of the 1920 to 1940 era of radio development also gave people a chance to compare the advances made in radio over the decades. The exhibits included a World War 2 vintage transceiver and aircraft communications equipment, various radio and transmitter parts dating from the 1920s and a home made loudspeaker along with a hand-cranked turntable. There was also an Oscar display with posters and literature explaining Oscar's origins and functions along with transceivers tuned to Oscar's frequency. A novice display demonstrated and explained the courses currently being

used by the C.Q. Branch, to enable beginners to gain their novice licence. Equipment used by novices was on show and posters explained the courses, the function of the WIA and the meeting places and times. Home brew equipment made wholly by amateurs was also on the display table at the Festival, and at approximately 1300 hrs. on Sunday saw the Festival draw to a close with an all in barbecue held in the area surrounding the National Fitness site. ■

Kevin Adams VK4ZKA (r.) gets a helping hand from Ross Dobbe to solder an antenna connector. Photos courtesy "Morning Bulletin" — Rockhampton.

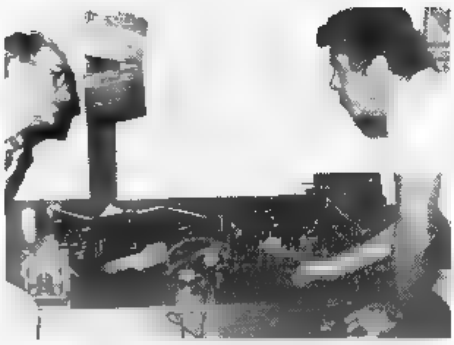
AMATEUR DISPLAY IN THE BRISBANE MUSEUM

Each year the Brisbane members of the VK4 Division offer a week-long display to the public on a site allocation in the Queensland Museum building during the busy time of the school vacation. Organised this year by Rud VK4QY, sterling support was given by many members in the varied duties and by manning the official station

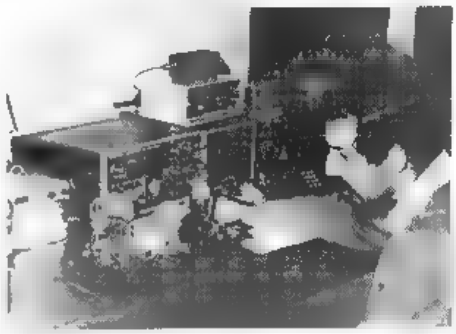
Mervyn Eunson VK4SO
Box 1513, Brisbane, Qld. 4001

VK4WIA/P under the direction of Jack VK4AGY.

HF and VHF antenna were mounted in the museum grounds, incongruously behind the full-sized models of the tyrannosaurus and triceratops. The rigs and other equipment were installed in a select area of the main hall, with Bert Hinkler's original tiny Avro Avian biplane supended almost overhead. The station was operated continually, and caused innumerable enquiries from interested onlookers, who received quantities of informative literature, including details of the decentralized study classes and course available



Jack VK4AGY and Bud VK4QY discuss the complexities of Spark.



VK4NAD ponders the progression from TPTG to SSB.

Not that the working of an amateur station was the only attraction: diversified exhibits included the morse keyboard and memory devised by Norm VK4NP, complete with VDU fashioned from a discarded TV set. This versatile machine was demonstrated to be capable of many functions, including the ability to defeat all-comers at "tic-tac-toe" and other contests.

Fascinating to the radio buff and layman alike was a large collection of old telegraph keys (carefully preserved and restored by Alan VK4SS) dating right back to the days of Samuel Morse. Complementing this were fine examples of damped spark transmitters and loose-coupler receivers from the shack of a local OOT. The display progressed through other vintage nostalgia to items of WW II military radio which had been pressed into amateur service

Offering something for all, there was continuous screening of colour video tapes (originating from the ARRL) which illustrated facets of amateur radio. Available space was filled with appropriate photographs and award certificates.

The response received caused the exercise to be counted a definite success. ■

MARCONI 75th ANNIVERSARY OF THE FIRST TRANSATLANTIC TWO-WAY RADIO COMMUNICATIONS

Arthur Brown VK2IK
26 Winifred Ave., Epping 2121

It is timely that we in Australia should note the passing of this historical occasion. The RSGB journal, Radio Comumnication, of March 1978 reports fully the celebrations held at Poldhu in Cornwall and Cape Cod in Massachusetts. These were the sites at which the original two-way communications took place on January 18th, 1903.

Amateur stations were set up at Poldhu (GB3MSA) and at Cape Cod (KM1CC) for the week of 14-21 January 1978. Messages were exchanged from members of Marconi's family, President Carter of USA and President Giovanni Leone of Italy. Marchesa Marconi, the widow of Guglielmo, officially opened the station at Poldhu which had been set up in the Poldhu Hotel Both she and her daughter, Princess Elettra, as guests of honour, took part in the various activities.

It should be noted that prior to the event being celebrated (1933), that Marcon had an earlier instalation at Alum Bay on the Isle of Wight. Four bronze plaques on a stone marking the site may be seen by visitors today. This site is about 15 air miles to the West of the powerful Shanklin radar station which tracks and identifies all aircraft movements for London's airport controllers. This station itself is on the war-time site of one of Britain's early warning ray direction finding stations (later called radar).

The plaques at Alum Bay read thus:—

"This stone marks the site of the Needles wireless telegraph station where Guglielmo Marconi and his British collaborators carried out from 6th December, 1897, to 26th May, 1900, a series of experiments which constituted some of the more important phases of their earlier pioneer work in the development of wireless communication of all kinds.

Marconi described the Needles station as the world's first permanent wireless station It was erected under his personal supervision by his assistant George Kemp for Marconi's Wireless Telegraph Co. Ltd., and was completed on 9th December, 1897. Other radio technic sts of this company who pioneered here were P. W. Paget, A. Gray, C. E. Rickard, W. Densham, F. S. Stacey, P. I. Woodward, C. H. Taylor. The station was dismantled in June 1900.

On 15th November, 1899, information for the first newspaper ever produced at sea, the "Transatlantic Times", was transmitted from this station by wireless telegraphy and printed on the US liner "St. Paul" when 36 miles distant. On 3rd June, 1898, Lord Kelvin sent from the Needles wireless telegraph station the first radio telegram for which payment was made.

The Needles wireless telegraph station exchanged radio messages first with a tug in Alum Bay then with Bournmouth, 14 miles distant, next with Poole, 18 miles away, later with ships 40 miles seawards. These wonders attracted world-wide attention and famous scientists from many countries came (1898-1900) to see the new wireless telegraphy in experimental operation."

The accompanying photo shows the memorial column at the later Poldhu site. The Hotel Poldhu is about 200 metres away from this spot.

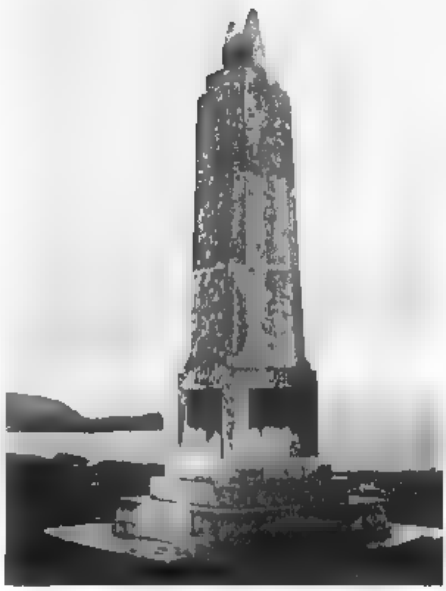
Inscriptions on the four bronze plaques at the base of the granite column on the cliff top at Poldhu Cove, near Mullion Village, not far from the Goonhilly Downs satellite tracking station, on the southern tip of Cornwall, an historic site of epoch-making experiments read thus:—

"One hundred yards north of this column stood from 1900 to 1933 the famous Poldhu Wireless Station, designed by John Ambrose Fleming and erected by the Marconi Company of London, from which were transmitted the first signals ever conveyed across the Atlantic by wireless telegraphy. The signals consisted of a repetition of the morse letter "S" and were received at St. John's, Newfoundland, by Guglielmo Marconi and his British assistants on 12th December, 1901.

From the Marconi Poldhu Station in 1923 and 1924, Charles Samuel Franklin, inventor of the Franklin Beam Aerial, directed his short wave wireless beam transmission to Guglielmo Marconi on his yatch 'Elettra' cruising in the South Atlantic. The epoch-making results of these experiments laid the foundation of modern high speed radio telegraphy communication to and from all quarters of the globe.

To commemorate the pioneer work done by Guglielmo Marconi and his research experts and radio engineers at the Poldhu Wireless Station between 1900 and 1933, the Marconi Company presented this historic land to the National Trust. Some six acres of cliff land were given in 1937 and 44 acres behind the cliffs on which stood the station were given in 1960.

The Poldhu Wireless Station was used by the Marconi Company for the first trans-oceanic service of wireless telegraphy which was opened with a second Marconi Station at Glace Bay in Canada in 1902. When the Poldhu Station was erected in 1900, wireless was in its infancy. When it was demolished in 1933 wireless was established for communication on land, at sea and in the air, for direction finding, broadcasting and television."



Marconi Monument at Poldhu, Cornwall, U.K.

TRIBUTE TO MARCONI

An interesting tribute to Marconi appeared 40 years ago following his death in 1938. This appeared in the BBC Handbook for that year. For those of us interested in our hobby and for those that have made electronics their career the following extract is well worth considering.

"On July 21, following the death of Marconi on July 20, a two minutes' silence was observed on all British wavelengths. In the course of a broadcast tribute, Professor E. V. Appleton said: 'For over forty years Marconi has worked as a radio experimenter, with unflagging energy and enthusiasm. He has never been content to rest. For him we were always at the beginning of things . . . If difficulties seemed to be ahead he tackled them with the zeal of a young experimenter beginning his first research He was like this to the end . . Great as his scientific and technical achievements have been, the man has been as great as his work.' " ■

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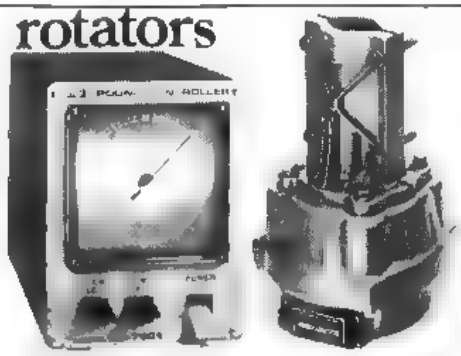

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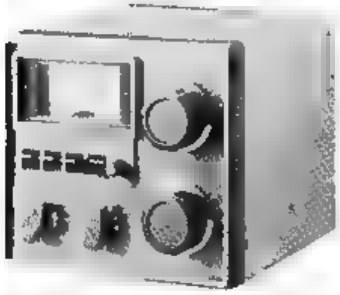

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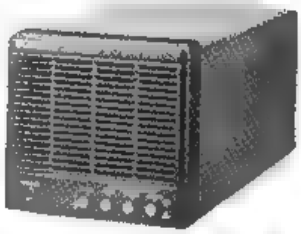

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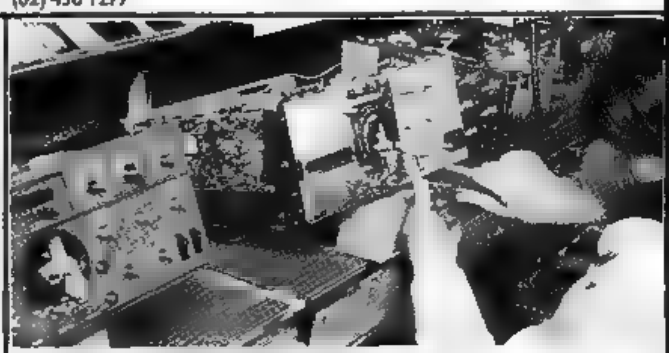


Assembling of communications equipment

"PS" **Did you know Kenwood are to release a new solid state 30W PEP HF Mobile Transceiver with full 10m coverage, digital display and noise blanker in OCTOBER? WATCH for further details.**

USB-LSB MODIFICATION FOR THE IC202

Robin Miller VK3ZVV
60 Winmalee Dve., Glen Waverley 3155

This modification was done in order to receive the Oscar 7 Mode B down-link on 145.950 MHz. It consists basically of changing the value of one capacitor and adding the necessary switching.

The CWT facility is sacrificed in this modification and the switch is used for USB-LSB.

The set can easily be returned to "as bought" condition. No boards are removed from the set and virtually no adjustments are necessary. The work requires some careful soldering and a fine tip soldering iron is recommended as PVC covered wires can easily be damaged.

To generate CW the IC202 shifts the frequency of the 10.6985 MHz xtal to 10.7 MHz by switching off translator Q8. This leaves a 68 pF capacitor in series with the oscillator frequency trimmer. This capacitor is changed to a 15 pF causing the oscillator to shift to approximately 10.715 MHz i.e. on the other side of the xtal filter. This will give us LSB.

To change this capacitor without removing the main board first use a fine screwdriver to remove the clips from the side of the aluminium can containing the oscillator. These clips must be prized off but they will come off quite readily. Bend them away from the can and then carefully twist the can and pull it free — no forcing is necessary.

Locate C62, then cut it in half with a pair of fine side-cutters, and then carefully remove excess "capacitor" so as to leave two wires protruding up where the 68 pF capacitor used to be.

Solder a small 15 pF NPO capacitor onto these two leads.

Next, carefully solder an 8 inch length of hook-up wire onto base lead of Q8, taking care not to overheat base lead or any surrounding wires

You may now check that the conversion works by earthing this lead When earthed Q8 is switched off and LSB signals will be copied. If the conversion is done with care there will not even be any need to readjust trimmer C61

Replace can with the hook-up wire protruding from underneath, but first loop a small piece of wire through the two clip holes on each side of the can so that when it is placed back in position clips may be soldered to the side of the aluminium can.

It is now necessary to modify the CWT switch so that it grounds the hook-up wire when in the "up" position (see Fig. 1).

The filter on the IC202 is not particularly good on the high side so rejection of the unwanted sideband when in the LSB position is only about 40 dB. (This should be adequate for reception of Oscar . . . Ed.).

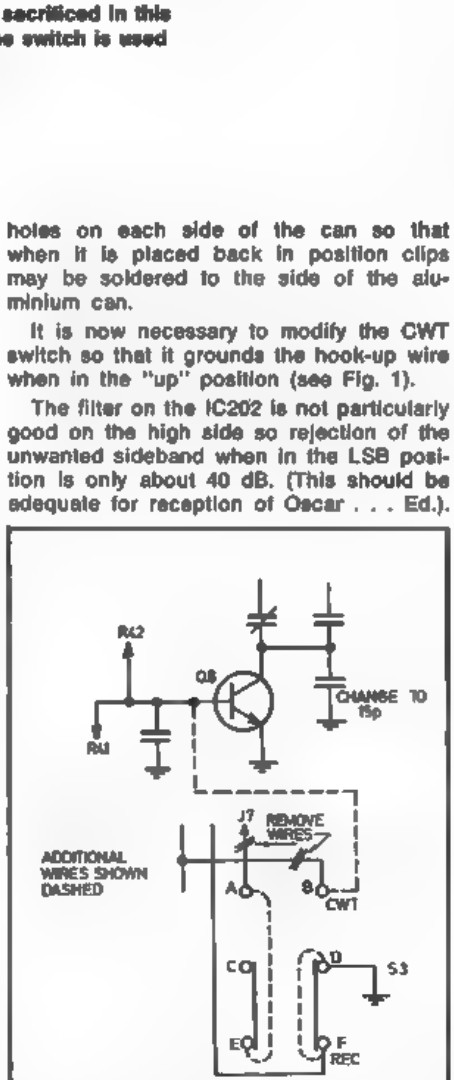


Fig. 1: Modifications to IC202 for LSB reception

NOTE:
Wire going to B on switch is actually two grey wires. They should be lifted off the switch and joined together with a covering to prevent shorts. ■

MEETING BRIEFS

PUBLICATIONS COMMITTEE

The meeting of the Publications Committee on 5th September discussed a number of advertising problems which had arisen and again emphasised the need for photographs for AR A decision was made regarding standard Oscar orbital tables as an insert into October AR resulting from initiatives and efforts by an advertiser. Some discusions were held about the difficulties of obtaining sufficient volunteers to carry on the work of publishing the magazine and what alternatives required examination.

PROJECT ASERT

The first meeting of Project ASERT Pilot Committee (a sub-committee of the VHFAC) held on 6th September under chairman Bob Arnold VK3ZBB was attended by Ken McCracken VK2CAX, Peter Wolfenden (Exec. Vice-Chairman and Chairman VHFAC) VK3ZPA, and Les James VK3BKF.

Several administrative arrangements were agreed and a division of specific activities was set up. Since the response to the Project could not be estimated at that stage a practical approach on a small scale was set in motion under Les, for hardware, and a design engineer for which various names were suggested.

EXECUTIVE MEETING

At the Executive meeting on 21st September, some time was devoted to a discussion on financial matters, the budget and the difficulties in finding a Treasurer to serve on Executive in place of Keith Roget VK3YQ prior to his departure over-

As usual, developments on the IARU and WARC 79 fronts were explained prior to the departure of the Federal President, David Wardlaw VK3ADW, and Peter Wolfenden to the IARU Region 3 conference in Bangkok and the former to the CCIR, SPM in Geneva later in October at which Michael Owen VK3KI will be sharing the time taken by the meeting

Bruce Bathols reported on Publications Committee activities and the proposals for a special issue of AR for December.

WICEN training practices were examined and a position determined The meeting lasted almost five hours crammed full with details on a wide range of subjects. ■

QSP

OOPs! — CLANGER DEPT.!!

In our Editor's Note on page 45 "Letters to the Editor" last month, we stated that converting to EAST from GMT after daylight saving is introduced, was that we add 9 hours to the GMT figure

Everybody knows that we add 11 hours, except for your Editor, who sometimes becomes most confused in simple matters like this

Thanks to all who rang and let me know

VK3UV ■

JIM'S SHACK

Ron Cook VK3AFW
7 Dallas Ave , South Oakle gh, Vic.

I leaned my bicycle against the garage wall and headed for Uncle Jim's shack at the rear A burst of car ignition drifted to my ears as I tapped on the door. "It's Bill here, Jim," I called.

"Come in, sit down and tell me your news," was the reply.

"No news, really, although I did hear an interesting conversation on the repeater this morning "

"Go on, Is that so?"

"Yes, these two fellows operating portable near the coast were discussing the use of a passive repeater system to enable simplex and repeater operation from their camp site back to the city. Seemed a bit far-fetched to me."

"Oh it could be done, Bill," said Jim, reaching for his electronic calculator. "Pass me that copy of 'Introduction to Radar Systems' by Skolnik. Now how far were these blokes?"

About 100 miles," I replied.

"I see, 160 kilometres or so. Well, I can demonstrate the feasibility of such a system but first we must make some assumptions. Let's assume the repeater site is 610 metres above sea level. For line of sight or free space conditions a hill at least 210 metres above sea level is required at the coast for the 160 km path. I used an old approximate formula that says the radio line of sight in miles is the square root of twice the height of the hill in feet. For metric distances we use d(km) = 4.12 by square root of height in [illegible]."

"Now," continued Jim, "most likely this convenient hill is on the repeater side of the camp site. This means that two antennae need to be put on top. Both should be at least 25 ft. or 8m high, one should point to the repeater and the other down to the camp site. It may be necessary to use two poles. Both aerials should be interconnected by a piece of low loss coax."

"Ah," I said, "one aerial receives a strong signal from the repeater and the second re-radiates the signal to the camp site which is in the shadow of the hill."

"Correct. Now if we can use this equation from the radar text," continued Jim, scribbling on a pad.

Power density = $ERP/(4\pi R^2)$
where ERP = transmitter effective radiated power
= Pt Gt
and Pt = tx output in watts
Gt = antenna gain factor
= antilog (dB gain — dB feedline loss)/10
R = range in metres
π = 3.142

"For a repeater ERP of 100 watts that gives 0.311 nanowatts per square metre on the hill. Let's see how many watts is captured by the antenna. I'll assume it has 13 dB gain at 146 MHz. This computes to a capture area of 6.81 square metres so the power available to be re-radiated is 2.09 nanowatts."

"That's real QRP," I said.

"Sure," replied Jim, "but let's allow 1 dB loss in the coax to the second antenna. That leaves 1.66 nanowatts to be re-radiated. Or 0.00166 microwatts if you prefer it expressed that way. Next assumption is that the camp site is 3 km from the hilltop. That gives 294 attowatts per square metre at the camp."

"What watts?" I cried.

"It's not much," muttered Jim, continuing to punch his HP 25. "If I assume a 13 dB gain antenna at the camp and a 3 dB coax loss the receiver sees 0.22 uV. How about that?"

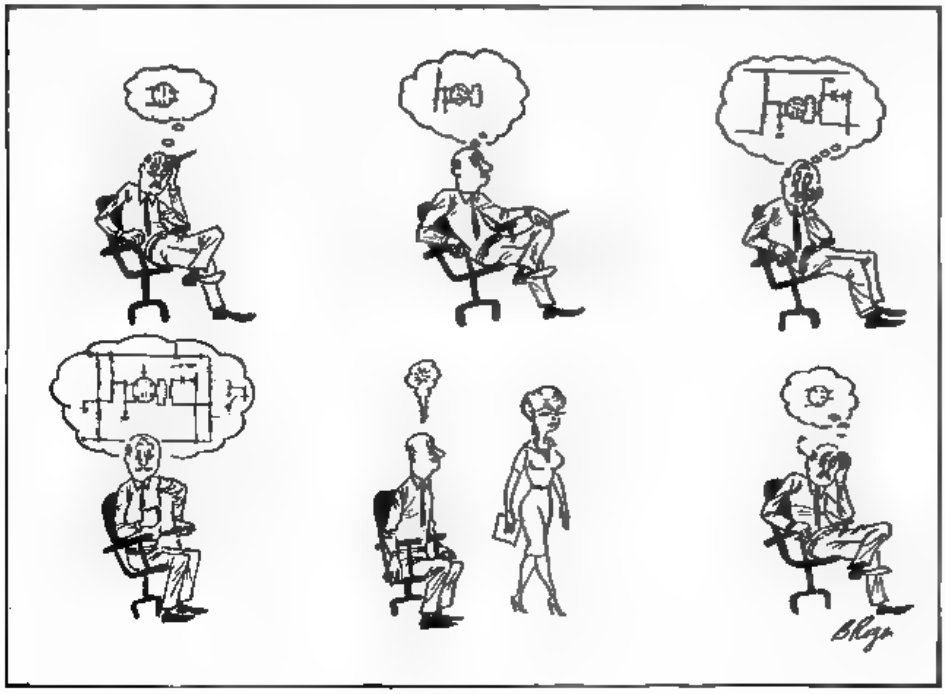
"Wow. But 0.22 uV isn't much of a signal on FM is it?"

"No," agreed Jim, "but quite useful on CW or SSB. Also remember that without the passive repeater on the hill the signals would be perhaps 40 dB below 0.22 uV. An extra 13 dB in the system would give saturation signals on any FM receiver That means replacing each 13 dB antenna with 17 dB ones and improving the camp coax. The re-radiating antenna must be line of sight to the one in the camp of course and all antennae would have to be aligned to better than 5 degrees. Of course a 10 watt transmitter in camp would put a 1 uV signal into the repeater."

"The signals aren't exactly paralytic," I said, "wouldn't it be better to drive to the top of the hill?" I assume that it has a nicely graded and sealed road to the top."

"Yes, certainly signals would be better even with only a quarter wave from the hilltop. Perhaps the system's best application is as a TV relay. If a 20 to 40 dB gain linear IC amplifier were inserted in the hilltop coax it would help enormously," continued Jim. From the distant look creeping into his eyes I could see that one of his IDEAS was forming.

"Maybe 10 metres is open?" I said. "Come on, let's take a look." ■



WHAT IS YOUR TOWER DOING TO THE ENVIRONMENT?

CB — A new blockbusting phenomenon is reported in certain Texas towns, where "FOR SALE" signs proliferate wherever the hated 11 metre ground plane dominates a local rooftop. Vigilante counter measures reportedly used by an aroused citizenry range from tape recording the offending transmission and giving it back to the CB neighbour via 150 watts of stereo audio through an open 3 AM window, to putting a straight pin through the offender's coax, and waiting for him to turn on his linear Thanks WA6NCX, W6NIR, and PAARA Graphs, bulletin of the Palo Alta CAARA.

The Environmental Protection Agency in Washington, DC, is considering a regulation to limit the height of all self-supporting towers less than 2.5 square feet (base cross section) to 34 feet.

It seems that free-standing towers experience wind shear effects which shake the towers It also seems that, especially in the late spring and summer, this shaking is transmitted to the surrounding earth. The vibrations disturb earthworms, causing them to come to the surface (often during the hottest part of the day). Exposure of the earthworm to the sun's direct rays causes them to die from sunstroke. Earthworms are very important facets of the ecology — hence the EPA's concern Thanks to the Cascades Amateur Radio Society Action Mini-Mag, Jackson MI

— From "The Lyrebird", Winter 1978.

(Pull the other leg, mate.—Ed.) ■

QUEENSLAND RADIO CLUBS WORKSHOP

QUEENSLAND RADIO CLUB WORKSHOP

The Queensland Division held its third annual Radio Club Workshop on 15-16 April, 1978, with 11 clubs represented. The Division sponsors a delegate from each affiliated radio club in the State to come to Brisbane to discuss club and Divisional problems, decide Divisional policies and to review and plan Divisional growth and and activities.

The workshop in particular examined the motions to be discussed at the 1978 Federal Convention, set up a State-wide Education Sub-Committee and instituted a weekly Radio Club Liaison Net.

The WIAQ Council see the Radio Club Workshops and Club net as an essential part of its efforts to serve its members throughout the State. In addition the Division is currently investigating the commencement of a "Queensland Net" aimed at encouraging informal contact between Council officers and all members throughout the State.

Queensland Radio Club Net

Time: 1930 EAST each TUESDAY.

Frequency: 3605 kHz ± QRM.

Net Control: VK4AWI, Radio Club Liaison Officer (VK4DT).

Participants: One station per club. ■

Top table at the Radio Clubs Workshops (from left) Qld. Div. President John Aarsse, Meeting Chairman Laurie Blagbrough, Federal Councillor Norm Wilson and Alternate Fed. Councillor Alex McDonald.

Only a cold cup of coffee and few biscuits left on the afternoon tea trolley . . . and it was back to hard work by representatives attending the Qld. Radio Clubs Workshop.

QSP

A NASTY SUBJECT

"Of course, periodically we all have a problem situation arise! One may occasionally be in an area where some unfortunate misunderstanding has occurred — where the air is a bit blue — where someone is 'Kerchunking' a repeater — where a net is being interfered with — where music (?) comes on on the access frequency — or where someone just forgot the kind of manners amateurs are supposed to exhibit. If or when this occurs, let me urge you to be cool. A quick flick to another channel can keep you from getting in the middle. In addition, most malcontents soon run out of ugly things to say or do if the audience disappears or at least does not respond. It is sad when someone is on such an ego trip that they must disrupt nets, upset normal repeater operations or otherwise make our hobby less pleasurable than it should be. But, in my opinion, it makes more sense to change channels than to respond and seemingly encourage the offender. It has seemed that in areas of greatest problems that if users can totally disregard the interference by not even keying up the machine, the problem will ultimately disappear. Users are gradually learning that offenders thrive on arguments, angry words, hot tempers and even threats. Generally the purpose of such interference is to stimulate antagonism and without this kind of response, the antagonizer receives no food for his sick ego and finally turns off the rig and wonders why, totally oblivious that he is being laughed at by cool operators.

'So keep cool and do whatever has to be done to meet the needs. If an alternate frequency and even Net Control is needed — QSY; if in a local ragchew — switch to simplex or go QRT, whatever the case, cool it. It is a lot better for the nicers and your reputation among peers."

Mac VK2AYA, *from "The Lyrebird"* ■

THE SCIENCE MUSEUM STATION — VK3AOM

Ken Gillespie VK3GK

Ken Gillespie VK3GK, one of the week-day volunteers, using the FT501 at VK3AOM. The FRG7 and FT2 Auto can be seen to the right, while partly hidden to the left is the Heathkit Monitorscope.

(It is with regret to report that shortly after writing this article, Ken passed away — see Obituary, page 50—Ed.)

The cover photo of AR for May 1975 illustrates the equipment of VK3BWI housed in the Science Museum in Melbourne, while P9 tells a little about the station and includes a picture of the VK3BWI console which controls the transmitters.

This station is owned, maintained and operated by the Victorian Division of the WIA for the weekly broadcast to Amateurs and short-wave listeners.

In the same room, alongside this, is a completely separate station — VK3AOM. Here the equipment belongs to the science museum and is kept in going order by the museum Curator of Electronics. Manning is by volunteers of the WIA as often as it is possible. At the moment this is 4 out of 5 week days, and 5 week days during school holidays. Week-ends are a different matter, however. Because there is no full call operator on the premises, AOCP volunteers are necessary. They attend one day a month and the required number of people is difficult to achieve because family commitments of working people come first. Currently two Saturdays and two Sundays are covered but the remaining ones are unmanned. The counter staff at the museum get asked about the station and when will it be open, etc, but there is nothing they can do about it.

The station is such good publicity for Amateur Radio that it is a pity to miss out on it by lack of volunteers. Since July 1st, the Director of the Museum has been making a reimbursement of $4.00 a day towards fares and meals of those manning the station. Hopefully this might persuade some who otherwise may not consider coming forward. Anyone interested, please contact VK3AAQ, QTHR.

The only things common to the two stations are the HF dipoles, which when switched to VK3BWI, put the VK3AOM transmitter on dummy load. In this condition, transmitter wave form of both SSB and CW can be demonstrated to the public on the monitorscope (a Heathkit instrument) and the difference between *all* the power being used on CW (at the same time showing that it is purely an on/off mode) and only the voice peaks of SSB making use of maximum power, is easily seen by lay people.

The VHF transmitter of each station has its own aerial.

An FT501 is operated on 80, 40, 20 and 15 metres (the latter using the 40 metre dipole). 10 metres will load reasonably into the 80/20 metre dipoles which have a common feedline, while a 2 metre FT2Auto on four repeaters and three simplex modes illustrate line of sight operations.

An FRG7 general coverage receiver tunes the MF/HF spectrum and is most useful on the Marine HF bands to show MUF propagation. As coast stations worldwide transmit CW continuously on up to six frequencies simultaneously, it is easy to start on 22 meg and come down through 16, 12, 8, 6, etc., to locate the frequencies that are open to various distances and directions. This is simplified by the fact that these stations, when not transmitting traffic, are sending their call signs continuously so are easily identified. (This also points home the system of international call sign blocks.) The observation that CW is used here also fascinates the visitors. Using the CW monitor on the FT501, morse code is demonstrated and the kids in particular get a great kick out of making their own initials. As the children, once shown, can do this easily, the parents and other visitors see that it is not such a difficult thing after all. This is especially so if a series of Vs is made on the monitor and then the gain of the FRG7 turned up and people recognise the same sound sent by a coast station.

The most often asked question is "How much is all this?" and then the statement "Amateur Radio must be terribly expensive", this after they eye the gear at the station. Then explanations that it can be as cheap or expensive as people care to make it are brought forward, i.e., if an old radio is rebuilt into a two tube low power CW transmitter on 40 and/or 20 metres and a simple transistorised converter placed ahead of a broadcast receiver (a cheap one bought especially for the job, if nothing else), then world-wide communication is possible without spending much. A future step can be DSB suppressed carrier transmitter, and so on.

During the week, school groups come in and get a lecture graded to suit the class concerned. Contacts with stations, both overseas (when conditions are suitable) and locally, are undertaken and the children or other visitors encouraged to say a few words. The contacts must be short to hold the interest of lookers-on.

A big problem is to determine just how much to tell people who call in. If someone has a technical background, he does not want to be talked down to and, on the other hand, a completely lay person must not have things go over his head.

On the whole the exercise is very rewarding for the operator and is good PR for amateur radio generally. VK3AOM, which is designed to show radio, and amateur radio particularly, to the public, can be said to be a success. ■

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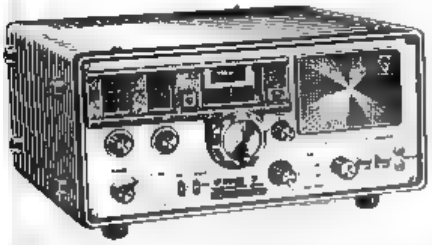

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SPECIFICATIONS:

Transceive Frequency Range 2 MHz in 144-148 MHz, Transceive Channels 8 Channels Mode of Operation FM: Antenna Impedance 50 Ohms unbalanced, BNC connector Power Requirement 12V DC (Negative Grounded) Power Consumption Transmit 300 mA, Receive 100 mA, Stand-by 25 mA, Weight 1.03 lbs (470g), Repeater Offset ± 600 kHz Modulation Variable Reactance phase modulation Max Deviation ±5 kHz, Microphone Condenser Microphone, Receiver Double conversion superheterodyne (1st IF = 16.9 MHz, 2nd IF 455 kHz) Sensitivity —4 dBu (NQ 20 dB), Audio Output Maximum 0.3 Watts, Attachment Rubber ducky antenna, Nicad battery pack, DC cable with cigarette lighter plug Carrying strap

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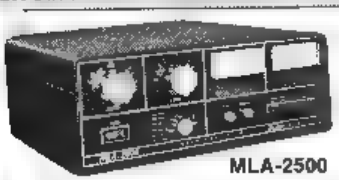

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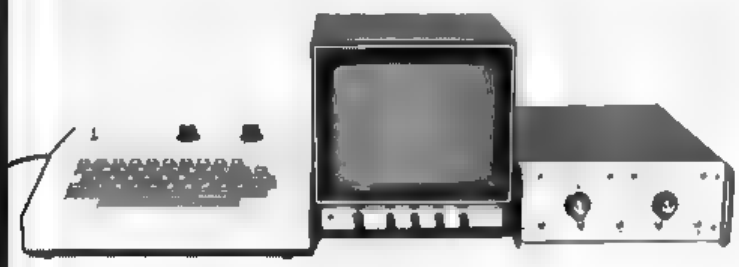

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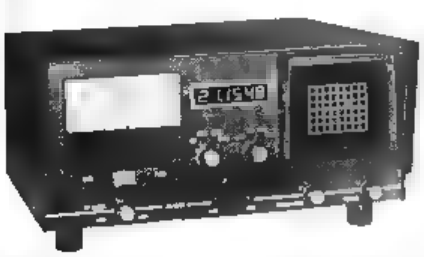

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REVIEW OF THE YAESU FT225-RD

Ron Fisher VK3OM

Yaesu's latest two metre all mode transceiver, the FT-225RD, follows the styling of the FT-901 HF transceiver. It also includes some of the excellent innovations of the 901. In essential features the FT-225 is a restyled and updated version of the earlier FT-221 and FT-221R. It provides USB, LSB, AM, CW and FM modes with full tuneable coverage of the entire two metre band from 144 to 148 MHz. In addition to the tuneable coverage, eleven crystal controlled frequencies can be switch selected from the front panel. As the transceiver covers four one megahertz bands, this gives forty-four fixed channels. The crystals are optional extras. All the features of the earlier FT-221 series are included with the addition of some new and interesting operating aids. These include a full seven digit display frequency readout, Yaesu's new frequency memory system and fully variable power output control on the FM and CW modes. Power output has been increased from the 14 watts of the 221 up to 25 watts on FM and CW, with a rated output of 24 watts PEP on SSB and 8 watts of carrier on AM. All of these features have been packaged into an enclosure 280 mm wide, 125 mm high and 315 mm deep. This is the same frontal size as the FT-221, and an additional 20 mm depth over the 221 being used up with a deeper front panel moulding and a slightly increased heat sink size on the rear to cope with the higher power. Total weight has only gone up by .5 kg to 9 kg.

In our review of the FT-221 in the June 1976 issue of Amateur Radio, the styling of that transceiver came in for some criticism, in particular the very poor "S" meter. Let me say right away that the appearance of the FT-225 is excellent and the "S" meter has increased in size and readability to one of the best in the business. The scale is now translucent with two globes providing rear illumination. The intensity of illumination for the "S" meter and the digital readout can be dimmed with a front panel push button. Other new features are a push button receiver RF attenuator and a "TUNE" control to peak the transmitter and receiver outputs. No calibrator is provided on the digital readout version, although it appears that a non-digital model might be available in the future and this will have a calibrator fitted. The operating switch for this would appear to replace the AGC fast/slow selector on the digital model.

Other normal features carried forward from the FT-221 are 600 kHz repeater offset for both normal and reverse operation, full VOX operation for all modes, side tone for CW, clarifier for receive and also transmit/receive, meter switchable for "S" readings or centre discriminator current and relative power output on transmit. A tone burst generator for repeater access is included but of course not required for Australian repeaters.

Numerous circuit changes have been made to the 225 circuit as compared with the 221, the most obvious being the VFO coverage of one megahertz per range as against the five hundred kilohertz of the 221. The receiver front end has been improved with the substitution of a 3SK51 dual gate FET for the single gate FET in the 221. This gives the receiver noticeably better performance with strong signals. Spurious signals produced in the 221 at our test location by the extremely strong Melbourne channel two repeater are not noticeable on the 225. A new IC type balanced demodulator replaces the four diodes as used in the 221 and this gives cleaner audio output in the SSB mode. The front panel microphone gain control now only controls the SSB and AM mic. level. The FM microphone level is now an internal preset control.

Unfortunately some of the shortcomings of the 221 have been perpetuated in the 225. The 3.5 mm headphone socket is still there on the front panel, making it non-compatible with normal headphones. You can of course plug in your transistor earpiece. With the meter in the discriminator position, the zero point still drifts. In fact it seems somewhat worse than the FT-221. Perhaps this is made more obvious by the larger and clearer meter but on our review model it took nearly an hour for the zero point to stabilise. Also the range of this function is still very limited with a meter movement of about 3 mm to indicate a 5 kHz offset. This makes it rather hard to accurately set the transceiver to frequency in the FM mode. Also when operating FM there is no guarantee that the transceiver is actually transceiving. This is dependent on the setting of the 10.7 MHz FM carrier generator and in fact the transmit and receive frequencies can be several kilohertz apart. Our sample transceiver had been carefully set up though and the actual offset was less than 500 Hz, which is quite acceptable. Strangely the otherwise excellent instruction manual does not give any mention to the setting of the 10.7 MHz FM carrier oscillator.

The new Yaesu memory system is an excellent and useful feature. It enables any required frequency to be entered into the system and then recalled for either transmit or receive or both. Two examples of its use would be to have your favourite FM simplex channel set up in the memory and your usual repeater set up on the dial. A flip of the SELECT switch enables either be selected. As the memory operates with the VFO only, the memorised frequency will change up and down in one megahertz steps with changes of the band switch. Again the instruction book gives little mention to the theory of operation of the memory. It does not even include a circuit of it.

THE FT-225RD ON THE AIR

With its built in AC power supply there is no problem in getting on right away. Only an antenna is required.

The 225 can of course be operated from a 12 volt DC supply as well, but my guess is that most of them will sit on the desk at home as a base station. No mobile mounting bracket is mentioned in the instruction manual and in any case it is a fairly hefty package to be hung under the dash. All of our tests were carried out using the AC power supply only. The digital readout is bright, fairly large and in all easy to read. The readout is to the nearest 100 Hz and is very accurate. As is usual with Yaesu gear, the frequency changes when the opposite sideband is selected, but the readout instantly shows this and it is simple to re-tune to the required frequency. First thing noted on receive was the excellent audio quality. The built in speaker has been positioned facing upwards in the transceiver top cover in contrast to the downward facing speaker under the FT-221. Received audio

is noticeably better in all modes compared with the 221.

The dual speed tuning has now been provided with a finger hole which is both an advantage and a disadvantage. Using the rear or fast tune knob was awkward as the finger hole on the front slow tuning knob extends to a slightly greater diameter than the knob itself and on every rotation knocks against the fingers when extended for the rear knob. With the one megahertz coverage quite a bit of knob turning is needed to cover the range. The push button controls for the noise blanker, receive attenuator, display and meter dimming, memory and tone burst were smooth and easy to operate. Each is accompanied by a small red LED to indicate its status. Transmitted audio was smooth and clean in all modes but reports suggested a slight lack of high frequency response. We arranged for a transmission to be taped along with several other transceivers and it appears that these reports were right. In order to check the microphone, we plugged in the FT-221 mic. and discovered yet another way to wire a standard Japanese four pin connector. They are just not compatible. To date I think I have found four ways used by various manufacturers to wire up these connectors.

Power output was checked with our Horwood power meter and found to be spot on the specified figure of 25 watts in all modes except AM, where it was almost exact at 7.5 watts. When transmitting SSB it was found that the effective output could be increased somewhat by pushing the audio gain up above the normal setting. This appears to produce some RF clipping in the final stage and give more talk power. However, before trying this, check it out with your nearest two metre neighbour in case it produces excessive splatter.

Assuming that some amateurs might purchase the FT-225 without the digital dial, a check was made of the analog dial calibration. The one kilohertz indications have been moved on to the tuning knob skirt and so are not illuminated. The 100 kHz increments are to the rear of this and lit in a soft blue colour. The whole thing looks very pretty but perhaps not as practical as the old FT-221. Over the one megahertz range accuracy was within one kHz. This is excellent but it should be remembered that recalibration is required when changing modes. The kilohertz dial is set to the right frequency held in place while the tuning knob is turned to give the right actual frequency.

INSTRUCTION BOOK

Two mentions have already been made to this in the preceding text, however in most respects it is well up to what we have come to expect from Yaesu. The book is very well illustrated with most adjusting points clearly shown. A full circuit diagram is provided with everything except the memory unit. This is shown as a secret box with external connections only. One point not often covered in manuals these days, and certainly not mentioned in this one, is the replacement of dial lamps. The positioning and replacement of these is not always obvious and often they are the first things to fail in equipment. As I have found out, suppliers don't always know how to replace them either.

The Yaesu FT-225RD used in our review was loaned by Mr. Fred Ball of Ball Electronics Services, Box Hill North, Victoria. Balls have full servicing facilities for the FT-225RD and, incidentally, know how to replace the dial lamps. ■

DEVELOPING COUNTRIES "DEPLORE" WESTERN RETENTION OF FREQUENCIES

The needs and allocation of spectrum space "are at variance between the developing and the more developed countries", says a recent editorial in the journal of the Asian Broadcasting Union. "In countries with poor or meagre communications, the need for extensive broadcasting coverage is essential for social and economical growth." The education and unification of a community can be efficiently achieved by radio and TV, but other telecommunications services are yet to be developed "and progress can be frustratingly slow. Although there are over 358 million telephones in the world, only 65 million of them are in Asia, Africa, Central and South America. Radio and television are vital to these areas and (results) can often be obtained faster through these services than by other means. Consequently their demand for spectrum has become acute."

The editorial, in the January 1978 issue, is written in the context of the prospects for the 1979 World Administrative Radio Conference, and it will add weight to the arguments of those who believe that there will be great pressure from the developing countries for a more favourable distribution of the spectrum in those countries.

The journal notes that broadcasting coverage in the developed countries has reached saturation. Of the world's 25,500 radio broadcast transmitters, 75% are in the developed countries, and America has 1,790 receivers per 1,000 inhabitants, while the developing countries have only 76 per 1,000. Radio use in the developed countries has become so extensive that technology is aimed at developing methods to remove certain services from radio altogether and put them on cables and wires, "making room for the expansion of new and existing services which can only exist by means of radio propagation". Yet some users "tenaciously maintain their hold over (their previous allocations) for variously described 'back-up' or 'stand-by' purposes . . . In today's overcrowded spectrum where space is at a premium this selfish dog-in-the-manger policy can only be deplored."

The editorial presses for the WARC to dispense with the "artificial ITU geographical zones" and the adoption of new zones based on development, economics and need. It goes on to add that, on these grounds, the developing countries are more deserving of the LF, MF and HF bands, since these "provide the only economical and direct means of reaching a large audience . . . The HF bands provide the only presently available method for world-wide broadcasting, without any apparent alternative, as well as providing the most economical means for internal coverage of the larger developing nations."

Single-sideband modulation would mean the re-equipment of a large audience with new receivers, and satellite broadcasting will take many years to develop and will be limited to national coverage.

Short waves are the only alternative for world-wide broadcasting. To alleviate overcrowding in this band elbow room in the allotted spectrum will have to be found, and this will be had at the expense of the fixed services. This would involve only expenditure on the part of the sender and the recipient of the point-to-point fixed services, as opposed to prohibitive expenditure in equipping the world's population with new receivers.

An article elsewhere in the journal points up the greater emphasis in the developing countries on frequencies below 30 MHz. In the lobbying for WARC it has been mentioned that the broadcasters have 60 per cent of the usable space above 30 MHz, while Mr. Irfanullah of the Pakistan Broadcasting Corporation notes that broadcasting claims 9.5 per cent of the spectrum in his region, while fixed and mobile services together have 85 per cent of the allocations. Totals like that convey the reasons for the editorial's impatience to cut the fixed portion (49 per cent) down to size. But there is little indication of the way the proportions allocated to each use within the HF band have been worked out.

The emphasis on short wave for world-wide broadcasting arises from the desire to convey cultural and political ideals to the rest of the world. This sensitivity to the way the West sees the developing world was also reflected in the suggestion last year that there should be alternatives to the news reporting of the International news agencies, such as Reuters, UPI and AP. In addition, a conference of the non-aligned nations' broadcasting organisations was held in Sarajevo last October "to consider the ways and means by which broadcasting organisations could co-ordinate to project the image of member countries to each other and to the world at large." There is no doubt that all eyes were fixed on WARC 79.

From Wireless World, April 1978. ■

PORTABLE ARMY WIRELESS SETS OF WORLD WAR II

Compiled by R. Champness VK3UG

3. The Type 3 Mk II is commonly known as a spy or suitcase radio; these sets are often seen in WW II films. The sets work from a variety of power sources, 6 volts DC, 110 or 24 volts AC. The transmitter is a CW only unit, although the receiver can receive AM and CW The transmitter has a 6L6 PA valve and has an output which varies between 15 and 20 watts over a frequency range of 3 to 15.5 MHz. The transmitter is crystal controlled and the receiver is a tuneable superhet with an IF of 470 kHz.

Soon after the close of WW II these sets were eagerly sought after by amateur radio operators as they were compact, versatile and able to be used as is without any modification. However, many of these sets were extensively modified and performed well on the amateur bands, particularly in portable situations. The set when packed in its waterproof boxes weighed 25.3 kilograms. A variety of methods were used to charge the 6 volt batteries commonly used with these sets such as a wind generator, hand generator, pedal and cycle adaptor generators, petrol driven generators and last but not least a steam powered generator. The steam generator consists of a boiler which is suspended in a brazier, coupled to a twin cylinder steam engine which is connected directly to the generator. At a steam pressure of 30 to 35 pounds a 6 volt battery is charged at 4 amps. The consumption of water was 2 litres per hour and burnt 7 to 9 kilograms of wood. Not particularly economic. I saw one of these steam generators a few years ago at a steam rally in Wantirna, 25 kilometres east of Melbourne.

4. The Type A Mk III is commonly known as a spy or suitcase radio, and is commonly seen in WW II films. The set works from a variety of power sources, 6 volts DC and 110 or 240 volts AC. The transmitter is a CW only unit, although the receiver can receive AM and CW. The transmitter has a 6C5 in the final and puts out 4 to 5 watts in the frequency range 3.2 to 8.55 MHz. The set has 5 valves all told crammed into a cabinet 8 cm deep, the actual size of the set can be gauged by comparison with a matchbox. The transmitter is crystal controlled and the receiver is a superhet with a regenerative IF on 1215 kHz and is continuously tuneable over virtually the same frequency range as the transmitter.

The set and all the spares, but less the waterproof case, weighs in at 7.7 kilograms. These sets did not seem to be as popular as the Type 3 Mk. II wtih amateurs, but a number of them were modified and performed quite satisfactorily An intriguing little set, simple to operate and worked well. ■

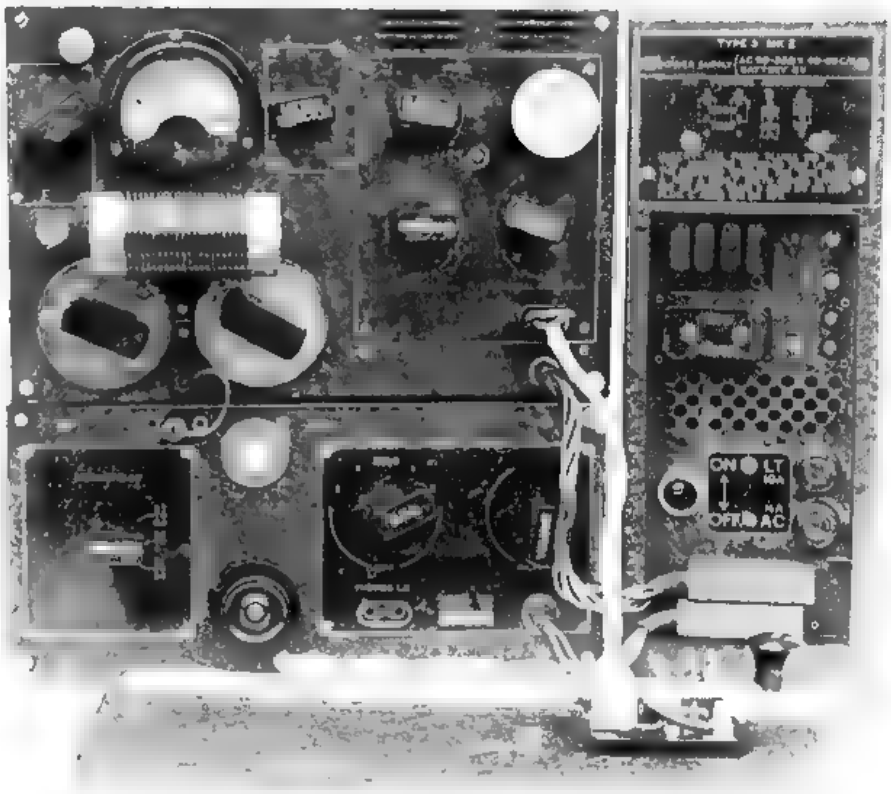

Photo No. 3 — Type 3 Mark II.

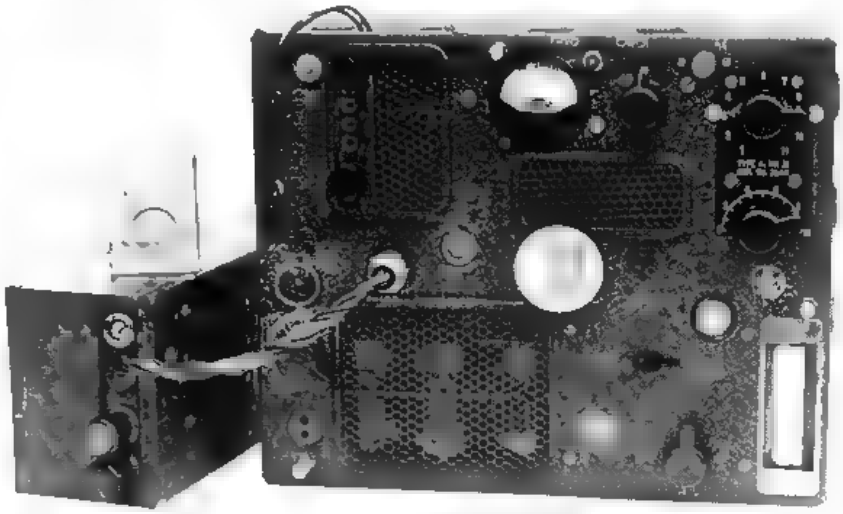

Photo No. 4 — Type A Mark III.

REMEMBRANCE DAY CONTEST — 1978

OPENING ADDRESS BY HIS EXCELLENCY THE GOVERNOR OF WESTERN AUSTRALIA AIR VICE MARSHAL SIR WALLACE KYLE

'CQ RD, CQ RD" This will be a familiar sound in morse code and radio telephony to thousands of amateur radio operators and short-wave listeners throughout Australia and New Zealand during the next 24 hours of the Remembrance Day Contest.

As patron of the Western Australian Division of the Wireless Institute of Australia, I commend to you this 31st Contest. It has the dual purpose of enthusiastic participation in an enthralling hobby and the opportunity to pay tribute to those of your own fraternity who offered their skills and their services and, in some cases, their lives in time of need.

Indirectly, of course, it serves another very important need these days — it brings together fellow enthusiasts regardless of colour or creed and it makes a positive contribution to world unison and fellowship.

The speed and accuracy of communications will improve technically with time and this will happen whatever we do, but understanding is something which needs the constant and active attention of all men and women and I believe that the friendly but highly competitive spirit of this contest is just such a positive contribution.

As you go forward into the next 24 hours, pause briefly to reflect on this contest as a splendid memorial to those 35 members of the amateur radio service who died in serving their country in World War II, and having done that enjoy this contest as I am sure they would wish you to do.

Be enthusiastic about it as they would have been had they still been with you. It is in this spirit that I now have great pleasure in declaring the 1978 Remembrance Day Contest open.

73s to you all. ■

AMATEUR SATELLITES

Bob Arnold VK3ZBB

AMSAT OSCAR 7

Disturbing news has been received from AMSAT on the condition of the batteries on board OSCAR 7

Details are not known but it is possible one cell is not charging or a voltage controller is defective. As from 7th October, OSCAR 7 was placed permanently on Mode A to conserve power, and we all hope the problem will be resolved and in due course the satellite will revert to normal operation. Listen to signals on 29.502 MHz for further information.

OPERATION

Activity on OSCARS 7 and 8 in Mode A continue at a high level with a good selection of ZLs and VKs to work.

Communication on Mode J of OSCAR 8 is still limited but a few stations continue to make reasonable QSOs.

OSCAR 8 REFERENCE ORBIT

The latest reference orbit which corrects orbit time previously reported is:—

Orbit 2725 EQX 0141 GMT at 64.4 degrees west.

OSCAR 7 PREDICTIONS

Have you noticed how OSCAR 7 is drifting westwards? Early this year the first orbit of the day was on occasions only 55°W. Now the nearest approach to the meridian is 60°W. In thirty years hence the day's first orbit will commence due north of Australia!

THE IC202 ON LSB

In September AR details were published of a method of converting the IC202 to receive signals on LSB.

Michal L. Alas F10K has now published a simple method of achieving the same result without an additional crystal oscillator. This can be found in AMSAT Newsletter for September 1978 and in Radio Communication (RSGB) September 1978 (Technical Topics Section). ■

ORBIT PREDICTIONS — DECEMBER 1978

Date	OSCAR 7 Mode	Orb. No.	Eqx GMT	Eqx °W	OSCAR 8 Mode	Orb. No.	Eqx GMT	Eqx °W
1	B	18485	0009	69	A	3771	0119	60
2	A	18526	0103	76	J	3785	0126	61
3	B	18520	0002	61	J	3799	0130	62
4	B	18533	0057	75	A	3813	0135	63
5	A	18548	0151	86	A	3827	0130	65
6	B	18556	0050	73	A	3840	0002	41
7	B	18571	0145	86	A	3854	0007	42
8	A	18583	0044	71	A	3868	0012	43
9	B	18599	0138	85	J	3882	0018	44
10	B	18608	0036	70	J	3896	0023	46
11	A	18621	0132	84	A	3910	0028	47
12	B	18633	0031	68	A	3924	0033	48
13	B	18646	0126	82	A	3938	0038	49
14	A	18658	0025	67	A	3952	0044	51
15	B	18671	0119	80	A	3966	0049	52
16	B	18683	0018	65	J	3980	0054	53
17	A	18696	0113	79	J	3994	0059	55
18	B	18708	0012	64	A	4008	0104	56
19	B	18721	0106	77	A	4022	0109	57
20	A	18733	0006	62	A	4036	0115	59
21	B	18745	0100	76	A	4050	0120	60
22	B	18759	0154	90	A	4064	0125	61
23	A	18771	0054	74	J	4078	0130	62
24	B	18784	0148	88	J	4092	0135	64
25	B	18796	0047	73	A	4106	0141	65
26	A	18809	0142	86	A	4119	0004	41
27	B	18821	0041	71	A	4133	0009	42
28	B	18834	0135	85	A	4147	0014	43
29	A	18846	0035	70	A	4161	0019	44
30	B	18859	0129	83	J	4175	0024	46
31	B	18871	0028	68	J	4189	0029	47

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Ron Henderson VK1RH

Federal WICEN Co-ordinator
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Ph (062) 54 2059, A.H

The introduction of distinctive WICEN callsigns is very much a divisional matter, compiled with P & T co-operation.

The situation at the time of writing is

A.C.T. Uses VK1WI "WICEN Net Control".

N.S.W. VK2WIA is the W CEN net control callsign and several regional WICEN callsigns in the VK2WIA-WIZ group have been requested.

VIC No information available.

QLD. VK4WIT Townsville, VK4HM Cairns and VK4WIM Mackay, are used for WICEN purposes. VK5WIE is the WICEN net control callsign.

W.A. VK6DY is the WICEN net controller

TAS., No information available.

N.T VK8DA is in use for WICEN purposes.

Wednesday evening is becoming the WICEN net night, VK2WIA, VK5WIE and VK6DY, in that order, can be heard conducting nets on 3600 kHz as the evening progresses. A good scheme for the passage of information, let's support it.

A SIMPLIFIED GUIDE TO EMERGENCY OPERATING

Aim

To provide the ordinary amateur radio operator who has had no WICEN training with a simple guide to emergency communications for use when caught up in an emergency situation.

Needs of Emergency

This guide is devoted to the situations where the amateur operator has to bridge the gap in normal communications in a hurry. He is then linking an emergency site or disaster area with the "outside world" and its normal communications.

Operator Actions

The amateur operator should call on the most suitable band — on the WICEN-designated frequencies listed below, to establish initial contact. If no contact results, use any frequency in use to stimulate a reply

The operator should declare his call an emergency call by using one of the pro-words below, and should not be put off if he receives replies from anywhere but the desired direction for skip may preclude the direct path and relay procedure may need to be employed.

Responding Station Actions

Responding stations should answer an emergency call but relinquish "hold" if a more direct circuit or link can be arranged however they should remain on LISTENING WATCH and monitor the circuit.

WICEN CALLING FREQUENCIES

WICEN calling frequencies are as follows 3600 kHz, 7050 kHz, 14100 kHz

Secondary frequencies will be spaced: +25 kHz for SSB, —25 kHz for CW

VHF calling frequencies are: Channel 60 (146.5 MHz FM), available repeater channels.

PROWORDS

Mayday — (SOS in CW) —

The station sending is threatened by grave and imminent danger and requests immediate aid.

PAN — (XXX in CW) —

The station has a very urgent message to transmit concerning the safety of ship, aircraft or person.

WICEN —

The sending station wishes to set up a Wireless Institute Civil Emergency Net or link.

STATE WICEN CO-ORDINATORS:

A.C.T VK1ZJR, 19 Gungarra Cres., Rivett. A.C.T 2611 Ph. (062) 88 5824, A.H.

N.S.W VK2NL, c/- Wireless Institute Centre, Crows Nest 2065. Ph. (02) 665 7434.

VIC. VK3AED, Lot 8, Ballarto Rd., Skye, Vic 3977 Ph. (03) 647 3877

QLD. VK4ZMG, QTHR.

S.A., VK5BW, QTHR Ph (08) 503555

W.A.- Sid Jenkins L60208, QTHR. Ph (09) 349 6909 A.H.

TAS. VK7RR, QTHR. Ph (002) 23 7454, A.H.

N.T: Darwin Amateur Radio Club, P.O. Box 37317, Winnellie 5789. ■

Transverter Model MMT 432/144'S'

UTILIZING an IF of 144MHz * 10 WATTS DRIVE of ½ WATT * VOX OPERATED, TWO SELECTABLE RANGES
FEATURES EXTENDED COVERAGE FOR OSCAR 8

This 432 solid state linear transverter is intended for use with a 144 MHz transceiver to produce a high reliability transceive capability. A 10 watt load and RF sensing network eliminates the need for any ancillary circuitry. A single coaxial connection is all that is required between the transverter and the associated 144 MHz transceiver

A wide range of applications is offered by the MMT432/144 transverter, which by virtue of its linear mode of operation will enable 144 MHz SSB, FM, AM or CW equipment to be used at 432 MHz. to 436 MHz.

Simply connect direct to your 2 metre rig, 12 volt supply, fit 70 cm antenna for instant SSB, FM, AM, CW operation, coverage 432-434 434-436 in two ranges.

FEATURES High quality double-sided glass fibre printed board * Highly stable zener controlled oscillator stages * PIN diode aerial changeover relay with less than 0.2 dB through loss * Extremely low noise receive converter, typical 3 dB * Separate receive converter output gives independent receiver facility * Built in Automatic RF VOX with override facility * Built in 10 watt 144 MHz termination, selectable attenuator for ½ watt * Use of the latest state of the art Power Amplifier transistors provide reliable 10 watts continuous output

MODEL MMT432/144 'S' Price $295

Transverter Model MMT 432/28'S'

FEATURES EXTENDED COVERAGE FOR OSCAR 8

Second Crystal Oscillator gives two ranges Low 432 – 434 MHz – High 434 - 436 MHz Programming available to either Transmit/Receive both Low, both High, or a mixture of the two Adjustable Drive Level is now provided by an input potentiometer. Optional RF VOX. Power Output 10 watts minimum * 28 MHz IF * Drive 1 mW to 500 mW * Aerial Changeover by PIN diode switch * Modern Microstrip Techniques * Power requirements 12 volt nominal at 150 mA 2.5 amp. peak * Case size 187 x 120 x 53 cm * Spare 432 input socket.

MODEL MMT 432/28 'S' Price. $245 **MODEL MMT 144/28 Price: $185**

100 Watt 432MHz Linear Power Amplifier

MML 432/100
Price $395

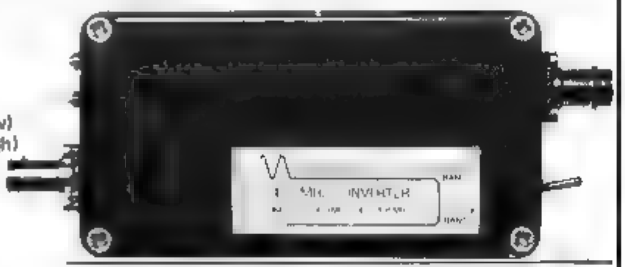
- 100 watts minimum output 10dB minimum gain
- Fully protected against poor load VSWR, overheating and excessive or Reverse Rails
- Equiped with RF VOX and manual override.
- Frequency Bandwidth 435 MHz- 15 MHz @ - 1 dB.
- 10 watts nominal input for 100 watts output.

DUAL RANGE 432 – 434 MHz & 434 – 436 MHz CONVERTER
TYPE: MMC 432/28 'S' & MMC 432/144 'S' **Price: $67.00**

FEATURES:
- Extra Range (434-436 MHz) For Satellite Reception
- Ultra Low-Noise First RF Amplifier Stage
- Highly Stable Zener Diode Controlled Crystal Oscillator and Multiplier Stages

SPECIFICATIONS:

Input frequency ranges:	432-434 MHz (low) 434-436 MHz (high)
I.F. output frequency:	28-30 MHz or 144.146 MHz
Typical gain	30dB
Noise figure:	3dB Maximum
D.C. Power requirements:	11-13.8 volts 12.5V nominal
Current consumption	50 mA Maximum



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6 METRE MOSFET CONVERTER
Featuring 24 MHz local oscillator output for transverter use:

Input frequency	52-54 MHz
I.F. Output Frequency	20-30 MHz
Typical Gain	30 dB
Noise Figure	2.5 dB
Typical Image rejectoin	65 dB
Crystal Oscillator Frequency	24 MHz
Power requirements: 12 volt ± 25% at 35 mA.	

MODEL MMC52/28LO Price $49.00

CONVERTERS PACK & POST $2.00

1296 MHz CONVERTER
Mircostripline, Schottky diode mixer.
IF 28-30 MHz or 144-146 MHz
Noise figure typ. 8.5 dB
Overall gain 25 dB
Power Requirements. 12 volts DC + 25% at 50 mA.
Price: $65.00

500 MHz COUNTER Model MMD050/500
Price $175

144 MHz MOSFET CONVERTER
Noise figure typ. 2.8 dB.
Overall gain: typ. 30 dB.
IF 28-30 MHz. 9-15 V 20 mA.
Price $45.00

VARACTOR TRIPLER 432/1296
Max. input at 432 MHz. 24 W (FM, CW) - 12 W (AM)
Max output at 1296 MHz 14 W
Price: $74.00

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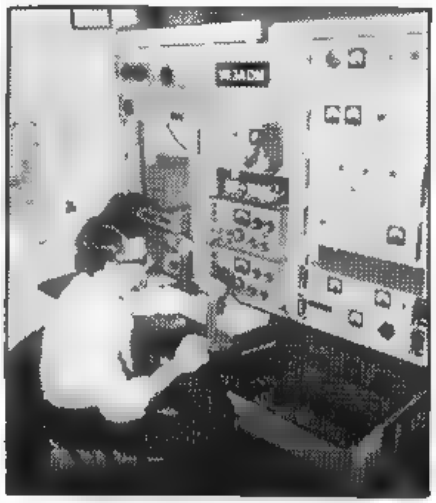

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RETURN OF THE SIX METRE BAND TO AMATEURS — PART 2

Eric Jamieson VK5LP

LETTERS AND OPINIONS

Following now are the variety of opinions expressed in writing to me by those amateurs who sent letters, followed by any relevant comments by myself.

The total overall opinion was for the return to the Amateur Service of the whole of the band 50 to 50 MHz. There will be those who say the reduced useage of six metres doesn't warrant so much space. But this situation could have been forced upon operators due to Ch. 0 causing interference to amateurs' receivers, making operations very difficult — quite apart from any TVI the amateurs themselves may cause. As the amateur population grows, and it is growing rapidly through the ranks of the novices in particular many of whom have come through the ranks from CB. Future useage will no doubt include six metre repeaters in line with overseas operating, where the segment 52 to 54 MHz is largely used for FM operation.

"I would like to see the 50 to 52 MHz segment returned to the Amateur Service to give us the full 4 MHz. If not possible I would like to see at least 50 to 50.1 MHz reinstated so that we can at least have part of the International band."

Comment: Restricted as this is, it would be better than we are at present, except that during good openings signals can be heard much further up the band, at least to 50.3.

"I would suggest we exchange our 52 to 54 MHz segment for 50 to 52 MHz, we would then be compatible with overseas countries and tie in with a portion of the New Zealand allocation."

Comment: If there is no chance whatever of obtaining the whole 4 MHz then this should surely be well worth pursuing. There will be those "local" operators who will scream because they may need to purchase new crystals to allow them to operate on 53.1 in lieu of 53.1 or 50.525 instead of 52.525, but the more serious operator will already have a VFO possibly in a transceiver, and either presently capable of operating 50 to 52 MHz or soon will be after the installation of suitable crystals. It might be remembered too, that even at this stage a proportion of the 6 metre population could easily operate both transmit and receive on 50 to 52 MHz. Declaring 50 to 52 MHz a commercial band or some other notation won't stop the importation of equipment capable of operating there. Remember, the Industrial and Medical Band at 27 MHz didn't stop the importation of a quarter of a million transceivers for use on that band, and they are being used, by the CB brigade. With exotic DX coming on 50 MHz how many are going to hold fire and just listen?

"If I wasn't a believer in the Amateur Code and a law abiding citizen, I would be very tempted to simply go ahead and use 50 MHz as I have full capabilities for operation there. Just like other spectrum squatters, and then wait for the matter to be legalised."

Comment: I am quite sure the fact that the average amateur is law abiding and wants to do the right thing that he hasn't gone ahead with gay abandon and used 50 MHz — there are plenty of geographical locations where it could be done with little chance of detection. I certainly don't condone out of band operation but when one looks at 27 MHz and notes the capitulation by the authorities and how the CB operators work DX with much more than 12 watts PEP, it does make one wonder whether the WIA 'cap-in-hand' approach in the past has resulted in amateurs having very little negotiating power which was proved at the time of the 27 MHz takeover. The "Big Brother" is watching or listening complex has often governed the thinking, and no matter how well intentioned it all may have been the results were costly. No, I don't think the average responsible amateur wants to operate illegally, but I do think he is entitled to a fair go and to some consideration for changes in operating pattern and spectrum useage.

"I consider we should lobby for 50 to 54 MHz on a non-interference basis, since this already applies on 52 to 54 and 144 MHz."

Comment: As pointed out earlier, all amateur radio operating has to be on a non-interference basis anyway, despite satisfactory equipment. Jim VK5ZMJ at Port Pirie, 110 miles from Adelaide, is unable to operate on 144 MHz until most people have gone to bed, because so many people are using 100 foot towers and masthead amplifiers to receive Adelaide stations (well out of service area range, incidentally), make life unbearable for him and the Department is either unable or unwilling to help. Geoff VK3AMK has mentioned at times that low power operation can sometimes be undertaken in Melbourne using vertical polarization, but running more than a few watts brings rocks on his roof! There are scores of other operators in similar situations and they have had to live with the problem. However, there are plenty of areas around Australia where operation on 50 MHz could be undertaken with little chance of problems arising.

"Obviously like everybody else active on 6 metres I would like to see the Ch. 0 allocation scrapped and these stations moved to a higher channel, and the full 50 to 54 MHz returned to the Amateur Service. However, our existing useage for much of the year typically extends from 52.0 to 52.1 and 52.525 MHz. I cannot see much chance of P and T, looking favourably at any request for the extended space.

"Probably the most sensible and practical proposition would be to request an allocation of say 50.000 to 50.500 MHz. This would provide us with common bandspace with other countries, and also provide more spectrum space than most of us use anyway. I would therefore favour approaching P. and T. for a shared allocation on a non-interference basis in the range of 50.0 to 50.5 MHz."

Comment: I agree, our useage of 6 metres is limited to the lower portions of 52 MHz, apart from the FM net on 52.525 and some operation on local nets, e.g. 53.1 in VK5. The change of mode to SSB has brought this about, having been copied from the HF operators in that everyone today works the other guy on his frequency. Compare the Ross Hull contest today with operation when everyone was on AM. Then stations were spread fairly thickly right up to 52.500 and often beyond, but then of course we didn't have Ch. 0 either! A shared allocation as suggested at 50 MHz may be OK providing we still had some exclusive allocation, i.e. perhaps 52 to 54 plus 50.0 to 50.5. But to have only a 500 kHz segment on a shared basis isn't looking too far into the future, maybe 20 to 30 years from now if we are still living or capable of living on this earth, we could find a small allocation on six metres very crowded.

"I prefer straight out availability of 50 to 52 MHz. If the allocation was increased to cover 50 to 54 MHz it may tend to fragment operation on six metres, i.e. Melbourne and Brisbane would be stuck with working above 52 MHz, while other areas areas would probably congregate around 50 MHz, with the possibility of a significant decline in local activity. Fragmentation would be overcome if Ch. 0 was shifted."

Comment: One would have to surely agree that if the whole 4 MHz is not to be available, then the preference would surely be 50 to 52, if Ch. 0 is shifted. Fragmentation of operation is always likely if something is added to that already in use, it is difficult for some to make changes however desirable they might be, so there isn't any doubt in my mind that those who operate 53.1 will continue to do so if they are permitted; such is their choice of course and we should respect that too. Melbourne and Brisbane would find 50 MHz operation much more difficult if Ch. 0 is still there, so their fragment would probably remain as of today.

"I believe the most achievable objective would be to attempt to gain a segment from 50 to 50.5 MHz, on a non-interference basis. Assuming we can get some agreement as to what ought to be aimed for . . . what do we do next? Our channels of communication to the P and T must be through the WIA (if our approaches are to be recognised), and I suggest Federal Executive be approached personally on this matter, with a view to a deputation to the Department. If unsuccessful, then a personal deputation to the Minister. We do, therefore, need to act in a professional way to try and achieve our objects."

Comment: One would certainly hope that following this article that at least the WIA VHF/UHF Advisory Committee will be stirred sufficiently to have another look at this matter and try to see if something can be done.

(This article has been referred to the VHF/UHF Advisory Committee and a report is expected soon. —Ed.)

"I feel we should endeavour to obtain all of 50 to 54 MHz, but apart from the problems existing with Ch. 0 in certain areas, it would really mean in general most operators would simply move down 2 MHz and do most of their operating on the low end of 50 MHz instead of 52 MHz. Maybe in view of the loss of 27 MHz to CB operators novice operators might be allocated a part of the six metre band. This would then give all amateurs a common band where full, limited and novice operators could meet, thus creating activity on the band to retain the allocation for the future."

Comment: It's certain the main centre of activity would shift down 2 MHz, and that's why despite the most desirable objective being the full 50 to 54 MHz, it is hard to justify the need, when it is obvious to all, including P and T, we can get by today with 2 MHz. But the idea of extending the band for use by novice operators would seem to have much merit, and I have sufficient faith in the present novice operators that I feel their presence would be accepted by all who currently operate six metres. It would certainly give them a taste of what VHF has to offer, and may well win a considerable number over to limited or full operation in an endeavour to make better use of bands further up the VHF spectrum.

"Contrary to previous predictions this sunspot cycle is supposed to reach a peak smoothed sunspot number of 150 in April 1980 making it the **second highest sunspot maximum in recorded history.** The greatest occurred in 1958-59. It would be a tragedy if VK and ZL were not permitted the use of the lower 2 MHz of the six metre band. Much could be added to the knowledge of VHF propagation if VK and ZL were permitted to use the part of the 50 MHz band which is useable to other VHF enthusiasts around the world. Let's face it, it is just not practical to try and tune over 2 MHz listening for weak signals. I can operate 52.0 to 52.5 if the worst case occurs, but I do hope you guys can get a 50 MHz allocation."

Comment: This letter came from the USA to support our aims, from an operator who worked 50 MHz to VK and ZL (mostly ZLs due to more favourable propagation conditions) in 1958 and 1959. I think the most relevant point from his letter is the statement "it is not practical to try and tune over 2 MHz listening for weak signals."

Of course it isn't. All operators in a certain part of the world are working a number of countries, say on 50.1 MHz or thereabouts, with marginal signals, but making the grade every now and again. It is inconceivable they will look for signals above 52 MHz under such conditions, the loss of gain due to the use of a normal antenna 2 MHz higher than the frequency for which it is cut will not help weak signals, if they are weak on 50 MHz they will certainly be weaker on 52 MHz all things being equal. But if VK stations were sandwiched in amongst stations from other call areas then it is likely contacts will result. There is little doubt VK stations have been deprived of many overseas contacts due to being 2 MHz higher than the majority of the world's 6 metre operators.

"Until the advent of CB, there was little large scale political pressure of the 'lobby the politicians' type. The Radio Branch was God and although our

re ationships may not have been ideal, we at least spoke the same language. The Amateur Service will never have sufficient numbers to really influence pol ticians. The Citizen Radio Service has this power, and have used it to 'rock the boat'. The P and T Department has been a casualty, and its masters are now more aware of its existence and operation."

Comment: How true!

"As a first step is there any reason why amateurs in VK1, VK5, VK6, VK7, VK9 and VK0 should not be allowed unrestricted operation from 50 to 54 MHz, and those in VK2, VK3 and VK4 outside a declared service area of the three main Ch. 0 stations also be given the same unrestricted operation? If any objection is raised to this scheme the obvious answer would then be if these stations using amateur power levels are likely to cause TVI to Ch. 0, how can there be any justification for more than one station using Ch. 0 anywhere in VK-ZL with the power levels they use?"

Comment: On the face of it there seems no reason why such a plan could not work, and the last sentence the justification. Co-channel interference between Ch. 0 and ZL Ch. 1 is such that ZL viewers are warned of possible deterioration of picture quality due to 'interference from overseas TV'.

"I would like to see all of 50 to 54 MHz available for the Amateur Service. If this cannot be on an exclusive basis, what is wrong with having the portion 50 to 52 MHz as Secondary Service for the amateurs?"

Comment: Nothing really. Unfortunately we are really only on a **secondary basis in our 52 to 54 MHz allocation** — non-interference operation is virtually the same thing, so that's no change.

The following amateurs were good enough to write to me, setting out their views, and I thank them for their time and trouble. There were a considerable number of similar opinions expressed which there would have to be on such a subject. A cross section of opinion has been taken. I would like to thank the following for their participation: VK3AMK, VK5KK, VK4ZIT, K6RNO, VK2ATQ, VK3YEZ, VK3ZYO, VK4ZBB, VK7JG, VK6RM, VK4KK, VK6GB, VK4FU, VK5ZBL, VK5NA, VK3AUR, VK3OT, VK4AKT, VK3ANI and K5ZMS. I hope I have not missed anybody. I note all Australian States are represented.

SUMMARY

The following is a summary of the 6 metre situation. The various points are numbered so if anyone wishes to write further they can refer readily to the relevant points.

1. The most widely viewed opinion was for the use of the whole 6 metre band of 50 to 54 MHz.

   Comment: Great to strive for, and should be aimed at, but I see little likelihood of P and T agreeing to this in view of FM using up TV channels 3, 4 and 5. We will be told we cannot justify keeping 4 MHz even looking to the distant future. Can we answer that?

2. The next most popular opinion was to have the use of 50 to 52 MHz firstly on a primary basis, secondly on a secondary basis, and other variations.

   Comment: This would seem to be the fairest approach to be made. It would mean the retention of 2 MHz as at present, but placing the segment in the international section of six metres. There would be compounded problems for those in Ch. 0 areas if they were not shifted elsewhere. 2 MHz would still allow room for various nets, beacons, and repeaters if required, also for RTTY, slow scan TV, FM, etc. THIS IS THE SECTION WE SHOULD AIM FOR.

3. 50.0 to 50.5 MHz also appears acceptable, but may be selfish in the eyes of some, as appearing orientated towards DX working only, and leaving little room for other types of operation, especially during peak band conditions. It would virtually mean no repeaters. Apart from some problems with the fragmentation of the band, a better choice might be the retention of our present 52 to 54 MHz with the addition of the 50.0 to 50.5 segment either as primary or secondary basis depending on what could be worked out. This would then let those who want to work DX and other countries to be able to do so, would leave present operating practices to be changed or continued according to the operators' wishes, and would probably cause the least disruption.

4. To be allowed the legal ability to VFO down to 50 MHz and invite a station to come up to 52 MHz for a QSO (mentioned in September 1977 AR in the list of options) did not receive much support, which is probably fair enough. Perhaps some do it now? However, it could have been the start of something more worthwhile in the long term.

5. The other suggestion of being allocated operation down as far as 51 MHz aroused no interest apart from one comment that it may be better than we are, allowing more working of ZLs. My opinion is that you won't work many ZLs wherever you operate, the only ones I have heard for years have been working a few VKs above 52 MHz. Six metres in ZL appears to be worse than in this country, hence the cry from Japan "Where are all the ZLs on six?"

6. There was a lot of criticism of the WIA right throughout the letters, some quite justified, some perhaps not, but the general thrust seems to be that it is difficult to get past the situation that the Federal body is HF orientated. Maybe that's the fault of the VHF fraternity in not doing something about it, perhaps it's easy to criticise, maybe they are the only willing ones to work at executive level. Several commented on the "cap-in-hand" approach to the Department in the past by the WIA as if unwilling to step on any toes. Perhaps the P and T Department would be happier to see a stronger approach, I don't know.

7. The P and T Department came in for very little direct criticism, not because I felt anyone was afraid to say so, but because I think it would be generally accepted by a lot of amateurs that the Department does its best with what it is given and has to work with. However, at whatever level the following should be directed, I would trust the comments will at least be read and considered with some care and interest, and acted upon if possible.

   (a) There seems little doubt the P and T Department is almost totally unbending in its attitude towards the need to make changes from time to time. The refusal to make available even a spot frequency around 50.1 MHz for use in the Darwin area, where so much TEP activity has occurred in recent times seems unreasonable. I refer readers to the first page under Terms of Reference (a) (ii), which should have been relevant in this case.

   (b) With the rapid growth of the peak of cycle 21 surely there could be some consideration given to making provision in the 50 MHz band for Australian amateurs to be able to share in the world-wide 6 metre contacts. Will it be a repeat of the 1957 situation when the PMG Department carried on long that a year or more of peak TEP activity was lost whilst Australian amateurs attempted to operate between their allocation of 56 MHz and the international allocation of 50 MHz? Ultimately we received permission to use 50 MHz with outstanding results.

   (c) If a case has not already been made to shift Ch. 0 due to interference patterns, it can only be hoped that the next two to three years will produce such a wealth of interference that the point will be brought home strongly enough to Ch. 0 proprietors in the first place, and in turn to the frequency allocation authorities, that this non-standard TV allocation will be shown as a very poor choice and ultimately disappear as a primary service in Australia.

   (d) On the question of exchanging 52 to 54 MHz for 50 to 52 MHz, it can be born in mind that the section 54 to 56 MHz is already used for the fixed and mobile service, and it would seem sensible to group similar services together. This will then leave the 50 MHz area for experimental services, like the amateurs, who can operate in and around interference from other areas, particularly if that interference represents other amateur stations. To suggest the area 45 to 50 MHz is suitable for defence purposes is ludicrous to say the least, you never know who may be eavesdropping thousands of miles away. And on this defence matter, may I draw your attention to Item 5.4 The Defence Group, on the first page, other overseas administrations don't use those frequencies for defence purposes.

   (e) Let there be at least some consideration given to the request of the amateurs, a body of responsible operators, who though not having the opportunity at present of being counted in hundreds of thousands, have been around for a long time and have made many useful contributions to the advancement of radio through the years.

8. Where do we go from here? I'm not quite sure, but I would hope the WIA will at least take up the cudgels as much as possible. There's enough material in this article for a start to be made. Could a conference of interested parties be held in Melbourne one weekend? I would be glad to attend. But whatever is done let's get cracking and try to do something. We have the Wireless Telegraphy Act in the process of being re-written, we have WARC 79 looming up. Shouldn't the matters contained herein be pressed home at the appropriate level? What is that level? Let's find out!

9. Now you have read this, what about some more letters? Have you anything to add? Would you support a convention or discussion on the matter? PLEASE let me know now straight away.

The Voice in the Hills. ■

QSP

SWL LISTENING PERIODS

A series of set listening periods (SLPs) for the short wave listener has been arranged for 1979. They will be of two hours' duration and will be held during the first full week-end of every month in 1979. All the six amateur bands will be used (10m-160m) and modes of reception will be Phone and CW alternatively. SWLs are asked to log every station heard in the set two hour period.

The objective of the exercise is to test propagation at a given time and to compare reception reports throughout the world. The SLPs are being published in all the world's DX magazines and news sheets. All logs will be summarised once a month and SWLs wishing to obtain a copy of the summary must send a SAE or one IRC if living outside Great Britain. Logs must show station heard, station being worked/called, time (GMT) and RST. All reports to be sent via the RSGB c/o Mr D. A. Whitaker, Hillcourt, 57 Green Lane, Harrogate, North Yorkshire HG2 6LN, England, as soon as possible after each SLP. Brief details of each SWL's equipment should be shown plus comments on band conditions during the listening period. Although these SLPs are in no way a contest it is hoped to award a small prize at the year end to the SWL submitting the best selection of SLP entries.

Good luck to you all!

SET LISTENING PERIODS — 1979

Month	Date	Time (GMT)	Band MHz	Mode
January	7	15.00-17.00	21	Phone
February	4	07.00-09.00	1.8	CW
March	3/4	23.00-01.00	3.5/3.8	Phone
April	7	16.00-18.00	28	CW
May	6	07.00-09.00	14	Phone
June	3	05.00-07.00	7	CW
July	7	05.00-07.00	7	Phone
August	4	10.00-12.00	21	CW
September	2	13.00-15.00	28	Phone
October	7	05.00-06.00	3.5	CW
November	3	05.00-08.00	1.8	Phone
December	1	18.00-20.00	14	CW

■

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VK2	VK2WI, Sydney	52.450
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VK3	VK3RTG, Vermont	144.700
VK4	VK4RTL, Townsville	52.440
	VK3RTT, Mt. Mowbullan	144.400
	VK4RBB, Brisbane	432.400
VK5	VK5VF, Mount Lofty	53.00
	VK5VF, Mount Lofty	144.900
VK6	VK6RTV, Perth	52.300
	VK6RTU, Kalgoorlie	52.350
	VK6RTW, Albany	52.050
	VK6RTW, Albany	144.800
	VK6RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
	VK7RTX, Ulverstone	144.900
	VK7RTW, Ulverstone	432.475
VK8	VK8VF, Darwin	52.200
JA	JA2IGY, Nagoya	52.000
KG6	KG6JDX, Guam	50.110
KH6	KH6EQI, Hawaii	50.104
TI	TI2NA, Costa Rica	50.060
W	WA6JRA, Los Angeles, USA	50.001
ZL1	ZL1VHF, Auckland	145.100
	ZL1VHW, Waikato	145.150
ZL2	ZL2VHP, Palmerston North	53.500
	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

I will be touring Western Australia as these notes are prepared and I am very pleased to be able to hand over the column for this month to my good friend David VK5KK who will provide you with some reading in his own style. Over to you, David, and many thanks.

AURORAL PROPAGATION

This is something which is not very common here as in some other places like Europe and Northern America because most of Australia is too low in latitude. However on 28-8-78 a large Solar Flare (Filament) created a visual aurora that could be seen as far away as Canberra in the early evening. The flare also had stirred the ionosphere close to the equator with unusually strong (5 x 9+) Japanese signals on 10 metres from 0900Z to 1100Z. The lower HF bands had the characteristic "buzz" of the aurora. At 0930Z Dave VK5MO heard Channel 0 with a rather distorted buzz peaking to the south-west from Adelaide. This was confirmed by several other stations from the Adelaide area. At 0955Z a very weak and distorted signal appeared on 52.05 MHz. The SSB signal was a VK7 but still DFing towards the south-west. The signal disappeared at 0958Z. Fortunately later on the 2 metre band opened into Western Victoria and several tests on 6 were arranged via Ch 7 Mt. William. VK3OT was audible from 1200Z peaking 170 deg. from Adelaide. Steve worked VK3ATN, VK7LZ, VK5KK and VK5ZMO. All were audible at this QTH but contact was only made with VK3OT on CW at 1325Z and on SSB at 1350Z. Noteworthy out of the above was VK3ATN who was using 3-6 watts into an 11-element beam. VK5ZMO was also able to hear my reflected CW signal quite strong even though we are only 35 miles apart. VK5AVQ was able to hear some signals but did not make contact. It is hard to break into an auroral QSO simply because at best, the phase distorted signals on SSB are barely readable, two signals sound like noise! CW signals are at least 1 kHz wide. Last signals were heard at 1400Z, by this time Channel 0 had disappeared altogether. It is interesting to note that at 1400Z the A index had peaked to 76.

The best opening for 10 years for some people, though back 2 years ago signals via aurora from VK7 were quite good to VK5, was missed by many people. Unsuccessful attempts were made on 2 metres to get contact via the aurora. It is also a pity that there was no activity from VK0 on 6 metres. VK0GM on an Oscar pass on 29-8-78 said all HF communication had been cut and the aurora was still visible. Other effects of the flare included a quietening of the upper HF bands for a day or so, locally and abroad.

(Another auroral opening occurred on 30-8-78 with VK1, 3, 5, 7 participating — Ed.)

LOOKING MORE TOWARDS THE NORTH

Below the Tropic of Capricorn things have been fairly low key on 6 metres. Well at least to about mid-August when VK1RK worked Yoshi JA2BZY and partially worked JH1GUL at 0930Z on 15-8-78. Reports have also been received from VK6 and VK2 about one or two openings to JA in the first half of September. Locally though everyone pricked their ears up on the 16-9-78 when 10 metres was wide open to Europe well past midnight. Next day at 0548Z I worked one JR1, 5 x 5. However, more was to come when at 0845Z the band opened to Townsville with 5 x 9 signals. Those worked from VK5 included VK4s TL, ZYA, ZJP, ZEZ, ZBJ, JH, RO and MS. However, everyone down here was able to listen to the VK4s work JAs via Type 2 TEP. This can be frustrating when you cannot hear the JAs on any form of extended mode. Pity! Up in northern VK4, 6, 8 TEP has been very good each day for some weeks now to Japan and other Pacific areas. For example KH6EQI, the Hawaiian beacon, has been through several times, into Townsville on 22-9-78 5 x 9 at VK4ZJP's QTH.

Next day, 18-9-78, the band opened on 6 metres to VK4 at 0936Z with VK4ZWH. The band had already opened from Bundaberg to Japan and one had to compete with the JAs to get a contact. Several other VK4s could be heard working to Japan. Then at 1000Z it became possible to hear the Japanese dogpiles and by 1003Z the first JA had been worked on CW via this extended mode of propagation. In the following 40 minutes two more stations were worked on CW, signals poor enough to make it CW only working. At 1045Z signals became strong enough for SSB. Between then and 1157Z signals averaged 5 x 6 with some to 5 x 9, mainly JA1s and JA2s with a couple of JA3s. Signals were down in Adelaide, VK5ZMO and VK5ZZZ working 2, VK5FT 3, and VK5AVO 2 on CW, whereas over a page and a half were worked at VK5KK. The opening of 17-18th of September were the first into VK5 for four months from Japan. VK7RH reported that JAs were heard on the 16th in Launceston on 6 metres. Also John VK2BHO has been working JAs on 6 around that date. KG6 has been worked in northern VK4, 6, 8 quite a few times in the last weeks along with HL9, VS6, etc. Jim VK5ZSA at Kadina, 100 miles north of Adelaide, reports hearing the opening of the 16th but unable to operate because of severe TVI problems.

I think a few people interested in 6 metres in the southern States could take note of the above opening as it may be the way things could become in the following months. Signals were equal to some of the best Type 1 openings seen so far although not without the characteristic Type 2 10 Hz flutter. As far as true non-extended Type 2 TEP openings go at this latitude (35 deg.) only two in the last decade can barely qualify. Both occurred during the peak of Type 1 TEP activity and were identical and within days of each other. They occurred relatively late (1245Z to 1400Z) and at a time of very low sporadic E activity. This occurred on the 13th and 16th of April and signals were the strongest ever seen for a long time, some over S9 on a system with a 50 microvolt S9 setting! That is a very Scotch S-Meter, believe me, in terms of some 6 metre systems! Several tests were done with respect to radiation angle and it was indeed very low angle. Two beams of virtually the same gain but with one at 10 metres in height and the other at 20 metres were used in the test. Although the lower antenna was well clear of any nearby objects it came a poor second to the higher one. This also was found, to a lesser extent, on Type 1 opening to be true. The old sporadic E tale of anything equal or better to a piece of wet string is good enough may loose a few people some contacts under the relatively poor conditions seen in the southern States so far.

Two metres is another band which has been in the news with the latest batch of TEP openings, not only JA/VK6 but Africa/Europe and Central/South America. However our own JA/VK8 contacts by far outnumber many times over all other efforts in quantity and strength. At an average of 3100 miles a contact VK8GB must be in line for an award for the several million miles covered so far! However where will JA be worked from next on 2 metres? There must be something in the almost perfect north-south path business else Darwin would have worked JAs from the 1, 2, 3, 4, 5 areas instead of the 4s and 6s and handful of 5s. This would explain (despite rumours) why northern VK4 and VK8 have yet to work on 2 metres as no part of Japan is north of them. This does not mean that they will never work JA on 2 as the peak of the sunspot cycle is a few years ahead. However, I think if the present world record is to be a guideline on path distance and direction, then Alice Springs to JA2 3, a distance of 4000 miles may hit the headlines next. So take note! During the two Type 2 TEP openings of April, 2 metres was constantly monitored on 144.11 MHz, both here and in Japan and regular test CQs were made from both ends but no resulting contacts. I strained 200 watts PEP and 32 elements beaming 0 deg. with several good 6 and 2 metre operators including JA1RJU but despite that JA1 is exactly due north in the same plane as the VK8/JA contacts, the 4850 miles took its toll! From other people's observations it definitely seemed that the mode of propagation was not yet good enough so maybe time will tell. But keep listening on 2 metres as one day you may have a pleasant surprise.

AROUND AND ABOUT

This paragraph will cover bits of subjects in short so watch out. It would seem that suddenly automatic CW keyers have become the rage on 6 and 2 metres, types ranging from simple 32 byte diode programmed keyers to RAM types with several k/bytes. VK3AUR has his micros rigged up to answer calls with "ORZ ORZ I AM A COMPUTER". VK5EM can read onto RAM CW off the air, after sending an auto CQ. Several others (and myself) are using RAMS for digital tape loops, tail-enders, etc. Voice tape loops are still popular but the digital stuff is more fascinating! This is good but when they are set going on call frequencies it can be annoying. Unless you are fairly remote from active operating areas use a nearby frequency, e.g. 52.040 to 52.045 MHz otherwise you will get the situation similar to one that happened recently when a VK5 and a VK3 set their keyers going on 52.05 MHz for nearly an hour both unable to hear each other but very amusing to others especially those who could hear both. Perhaps we should have a national keyer frequency. As the season goes on they will probably be used less. VK4OT's transverter project for VR4DX has been delayed due to the fact that VR4DX has sold his Yaesu FT101 series transceiver and got a TS820S. The FTV650 all-wave transverter, originally for the Yaesu 400 series, needs an external supply for the 5 voltage rails as Kenwood transverters are all solid state and not all working voltages are brought out the back. Also to complicate the problem it draws more HV current than the later B model and requires ¼ to a ½ watt of 28 MHz drive whereas the 820 has only, at the most, 10 mW available at the exciter out socket because no more is required by all solid state transverters. It is only a matter of changing the 12k resistor in the input line to the Tx mixer on the FTV650B (I have now a FTV650B going from an 820 before) but the older one is a little more difficult. All the best Steve. Would you believe that a Channel 0 translator has been installed in Townsville and has been going for several months. It runs 500 watts and is beamed inland so its primary area is inland. VK4RO says it makes a good beacon from his QTH in Ayr 50 miles from Townsville. I wonder how JA TV would be under the good TEP conditions? How many JAs are being interfered with, though its 500 watts probably is low enough to be unnoticed. The authorities must be getting desperate for channel space. VK9ZM is on 6 metres and has been worked by VK4s and JAs from Willis Is. VK4ZJP said that he was to be on 52.05 MHz at 1000Z 16-9-78 but only thing heard in VK5 was what he was working. A tip worth following when looking for 6 metres DX is 10 metres. It also works for sporadic E. Over a period of time one develops an acuteness to the various signs but generally a lot can be obtained from 10 as to whether 6 will open or not on some paths. The older operators know this, but to the newcomer especially the dual licence N and Z calls, this can be one way to relate the two bands closer. DX-peditions take note, how about taking 6 metres with you even if you are going to the South Pole. There is a lot of challenge in covering paths that may be common on 20, good on 15, rare on 10, and unheard of on 6. If equipment is a problem see if you can get in touch with an

active VHFer he will most probably know of someone who can lend/sell something. How about an equipment pool similar to SMIRK's. (P.S. one surplus FTV650B at this QTH.) With intermittent sporadic E has only been fair with only a few openings into VK5. VK2YDY reports that 6 was open an hour before the RD contest to VK7 for a short while. By the way Phil 2YDY has a novice call (VK2NOM) and should have received his full callsign when you read this.

TROPOSPHERIC OPENINGS HAPPEN ALL THE TIME!

Heading the good stuff are the openings on 10-11 September. At 2335Z on the 10-9-78 VK3AJR, along with others, was able to hear the Orange Repeater on Ch. 2. For the next 6 hours the repeater had very little QSB (±1 to 2 dB) being just workable at the peaks. Rob tried to get someone up on 2 metres SSB but no takers. Unfortunately Phil VK2YDY was away from Mores at the time. From this end VK5 K Eundunda, was able to work into the repeater on the 10-11th. Ian has one up on all of Adelaide in that he is on the other side of the Mt. Lofty ranges and along with Peter VK5ZPW have a beautiful takeoff to the East, all we see is lots of hills. No-one on the Adelaide plains was aware of the opening.

The Adelaide beacon went off air on the 17-9-78 with a defective keyer and as of today (26-9-78) is still off air. It should be going again by the end of September as long as the old motor drive for the ID wheel can be repaired. It would be interesting just how many beacons are left that use this sort of keyer, I can think of only one user. With channel 5A for the Hamilton area a lot of people have already gone quiet on 2 metres, compared to activity two years ago it is dead. VK3ATN can be worked any time on 6, 2 or 0.7 metres, yet he is further away than some VK3s and VKs from Mt. Gambier. To prove a point, Mark VK4AVQ took a FT221 and a 5 el. yagi to Mt. Gambier on 14-9-78. At 1200Z Mark could hear my CW Q5 and SSB Q3-4 on 144.1 MHz, in return Mark's 16W CW signal was Q4. It should be added that Mark had to compromise transmitting because he was hanging on to the antenna! Although at the lookout no tropospheric conditions were about and it was raining both ends! The distance covered was 262 miles. Not bad for portable operation. Antenna being hand held meant that Mark could see if any polarity rotation was occurring but the signals were definitely horizontal. No other signals could be heard. The Adelaide beacon on 144.8 was not heard.

EME report unfortunately will be missing from this issue however I have a couple of interesting bits of news. Chris VK5MC has had his dish mounted for some time and feeds installed. In early September, Chris conducted tests back to Adelaide on 432 MHz with Peter VK5ZPS. Although Peter has a damaged feed on his 432 MHz, yagi signals were quite good one way. Chris can receive sun noise on both 432 and 1296 MHz but I am not quite sure whether he is fully set up for transmission yet. VK5ATN is continuing with his Radio astronomy project with VK3AJR. At the moment they are experimenting with some NEC transistors on 432 MHz and getting noise figures of the order of 0.99 dB. Don't expect to buy that one from your local shop as it is a little expensive.

Barry VK5ZAU recently went mobile on Kangaroo Is. with 144, 432, 1296 and 2304 MHz. He was conducting experiments with Reg VK5QR on the propagation over this long path (not line of sight at all). On 25-8-78 Reg worked Barry two-way on 144 and 432 and one-way SSB on 1296. By the way, Reg has for some time been running high-level mixed SSB on 1296 MHz and uses an IC202 as the driver. Barry was set Cape du Couedic, not far from the light-house, which is the southern most tip of the Island. Path to Adelaide is about 110 miles which over half is water. Also worked Barry on 144 and 432 two-way, a distance of 140 miles.

There seemed to be very little tropo as signals had the usual fade and averaged 5 x 5. By the way, I only stumbled on to the goings on when, tuning a new pre-amp on 1296 MHz, I found Reg on 1298.1 MHz SSB. Reg, though 35 miles away and beaming S-E, was still his usual 5 x 9 plus signal due to reflections off various nearby objects, mainly the Mt. Lofty Ranges. Antenna 1 metre dish at 40 feet. On 26-8-78 very good tropo conditions enabled Barry to work from the same QTH VK5s GL, KK, AVQ, ZPS at to 5 x 9 plus. On 432 he worked VK5KK 5 x 9 and VK5s AVQ and ZPS 5 x 5. No other bands tried and all contacts between 1055Z and 1210Z. Signals also about on the next morning when Barry made partial contact with VK5ZMJ in Pt. Pirie, a distance of over 200 miles, ¾ over land, on 144 MHz. Barry tried another experiment with VK5QR on this side of the Island during the next week but no further information on that one.

Gordon VK5ZGV recently left for Sydney after being resident here for over two years. Gordon has previously held VK3 and VK6 callsigns and was one of the original SSB stations on 2 metres from VK3 in the late fifties. Before Gordon left on 26-8-78 he rigged up his TS700A with a horizontal mobile antenna. From this QTH (Wasleys) we were able to keep in contact on 2 metres SSB from 0329Z (in Adelaide) to 0626Z some 15 miles east of Blanchetown on the River Murray, some 70-80 miles from here. It should be noted that in between us for the last 40 miles were hills up to 1700 feet in height. I am about 400 feet a.s.l. The last 40 miles were relatively poor but about 5 x 5 signals. Over the same path FM signals usually disappear once over the hill. All the best in Sydney, Gordon.

OTHER DOINGS, ETC.

Soon to hit the market is the new ICOM IC402, a 432 MHz transceiver of similar specs. to the IC202 and 502. Those who can remember the impact the IC202 had three years ago (doesn't seem that long, does it!) may all be wondering how the 402 will affect MHz. But I think the price (this has been a killer for other UHF rigs) may stop some and the ever popular microwave modules has probably cornered a lot of the market. Anyhow, we shall soon see. The IC402 is double-conversion with a tuneable first IF and four 200 kHz bands, 3 watts PEP on transmit on USB/LSB/CW. Apart from the Belcon Liner and KLM transceivers it is a first for ICOM. Who will be the first to make an add-on linear amp? Try a 2N5946 which with 12.5V DC and 3W drive will give 13W out on 430 MHz. A MRF646 with 13W drive and 12.5V DC will give 45 watts on 430 MHz. The 2N5946 sells for about $13.00 and the MRF646 for about $28.00. The MRF646 works very well at this QTH with the 10 watts drive from the transverter. Circuit as per the Motorola RF Data Manual, Ref. 12-49. Make sure you DO use teflon fibre board (Er — 2.55).

Yaesu have released their new FT225RD and FT625RD. The 625 is quite a change from the earlier 620 series now having single conversion, FM and optional digital readout and memorizer. Both the 225 and the 625 are designed with similar styling to the FT901. Also you can now get a FTV901 transverter which . . . wait for it . . . is designed to give transmit facilities on 6, 2 and 7 metres in the one box (as well as receive) with the FT901DM. One would hate to guess at the price of both transverter and transceiver decked out with all the options! Back to the 625 and 225, both have a rated 25 watts output making them both good for driving grounded grid tubes like the Eimac 8873, 874, and 8875. With 2 kV and 25 watts drive, 600 watts PEP could be interesting (1 tube).

From the SMIRK newsletter for 8-78 some interesting modifications for the FT620 series. Q401 (3SK40M) can be replaced by a 3N201B Mosfet for more gain and better signal/noise ratio. Q401 is the only one on the board in a socket. The receive mixer can also be replaced (Q403) with a 3N201 or 3N211. While on modifications a useful one to try with the FTV650B is replacing the RF amplifier Mosfet with a 3N201 or a 3N210 Mosfet. The later one is in a different package to the original but has the same configuration. The 3N210 also has too much gain with the original gate 2 dividers so one of the resistors (R303) will have to be reduced to about 22k. This can easily be done by paralleling a 33k resistor with R303. The FT221 and FT221R can be improved as far as signal handling goes by replacing the original FET mixer (Q402) with a Mosfet. Other mods tried to both TS700As and FT221s included improving the woofy audio on FM by reducing the values of coupling in the respective FM microphone amps. There is no reason why, with minimal modification, and 700 and the 221 type transceivers cannot achieve 2 dB noise figures. In fact most 700s encountered only need minimal adjustment to T1 and T2 on X55-1120-00 to achieve something close to this. The fact that a lot of 700s do not have much gain compared to some transverter systems must not be confused with a lack of sensitivity. The pre-amp on the newer 700SPs does not change the noise figure a great deal but does provide a little more gain. Those IC202 owners probably know know that the typical noise figure is about 5 to 6 dB so with the addition of any power amplifier over 30 watts something should be done to improve this side of things. Changing the front end Mosfet only (Q2) partially affects a cure (try 3N210) but the real problem lies with D25 the diode which isolates the receiver during transmit. During receive a small current flows through this diode generating noise. Those who like fiddling may like to use a miniature relay to switch the antenna over. Otherwise a more complete solution is to include a receive pre-amp in the linear switching and leave the 202 as is. There is quite a difference between an unmodified IC202 and a very good low noise receiver on a weak signal.

Locally 432 and 1296 has been quiet but one is becoming more aware of the increase of activity on these bands. Would you believe that if you called CQ on 432.1 MHz most nights you would have about the same chance of getting a bite as if it was 144.1 MHz (yes, it's that bad!). Anyway with the announcement of UHF for Ethnic TV a lot more people are reappearing back on 2 metres. We still are going to have problems with Channel 5A being allocated elsewhere in the country along with Channel 0 but at least it is a big step in the right direction. Our nearest Channel 5A is 90 miles from here, at Loxton and although it does not affect the Adelaide area, it has killed ALL 2 metre activity in that area. That's it for this month from VK5KK. Next month you shall have Eric back on the pen and full of fight after his recent holiday!

73s from David VK5KK ■

AROUND THE TRADE

BWD EXTENDS RANGE

BWD have announced the release of two new oscilloscopes and probes.

The Model BWD645 is a dual trace storage oscilloscope. It provides variable persistence storage, 30 MHz bandwidth, 1 mV sensitivity and battery operation.

The Model BWD680 is a new innovation. It is designed specifically to meet the needs of the power control field. Many features essential when working with power circuitry are incorporated.

Two new probes have been added to the range. The P36 probe has a 300 MHz bandwidth.

The P37 probe has a 100:1 divide ratio, a frequency range of 100 MHz and a voltage rating of 1.5 kV.

Details can be obtained from BWD, PO Box 325, Springvale, Vic. 3171. Ph. (03) 561 2688. ■

NEW AUSTRALIAN AGENT FOR WORLD FAMOUS RADIO PAGING EQUIPMENT

Multitone Electronic Co. Ltd., Britain's leading manufacturer of radio paging equipment, has appointed TR Services Pty. Ltd. of Chatswood, NSW, as their agent in Australia.

Both principal and agent believe that there is a rapidly growing market in Australia for the multitone equipment, with hospitals being one of the major users.

Multitone is nearly fifty years old, and began life as a small manufacturer of hearing aids. In 1955 the famous St. Thomas' Hospital in London asked Multitone to develop and produce the world's first pocket paging system.

The company now exports some 70 per cent of its production to seventy countries and have to their credit a long list of firsts in the history of radio paging. They employ about 600 people, and have built up its very extensive research and development department to keep Multitone in the forefront of radio paging throughout the world.

TR Services Pty. Ltd., whose General Manager is Mr. M. R. Hall, is a joint venture company between Email Ltd. of Sydney and Telephone Rentals Ltd. of London. ■

KIMBERLEY TRANSCEIVER

A lightweight, modern radio transceiver is made by West Australian company, R.F. Systems Pty. Limited.

The transceiver, known as the Kimberley, is a dash-mounted VHF and UHF model. It is suitable for mobile or base station operation or as a fixed link or repeater.

For protection and an attractive finish, the set is encased in a Comalco aluminium extrusion surround.

The transceivers are also becoming popular overseas. R.F. Systems recently exported sets to Kenya and Malaysia where they are used by the telecommunications department.

The transceiver was designed to withstand difficult conditions. Each radio set is extensively tested before it is marketed. Tests include a heat test to 60°C, vibration and drop tests.

Further information about the Kimberley is available from R.F. Systems Pty. Limited, 98 Guthrie Street, Osborne Park, WA, telephone 446 8322. ■

AWARDS COLUMN

Brian Austin, VK5CA

P.O. Box 7A, Crafers SA, 5152

DARC DX AWARDS

Deutscher Amateur Radio Club

General Rules:

1. DARC's official DX awards Europa Diplom, WAE and EU-DX-D can be obtained by licensed radio amateurs and SWLs all over the world. The specific rules of these awards are given below.

2. All contacts must be made from the same country. Awards for club stations will be issued to the club, not to an individual operator.

3. The DARC-DX awards are based on the "European Countries List".

4. All amateur bands for which the applicant holds a valid licence may be used.

5. A set of application forms for DARC-DX awards is available for a large size SAE plus 3 IRCs at the address below. The use of these official forms is obligatory.

6. QSL cards for all contacts claimed must be submitted with the application. All cards must be presented in their original form. Any altering or forging will result in disqualification.

7. The service charge of 10 IRCs or equivalent per award or 3 IRCs or equivalent per endorsement covers the mailing of the award and the return of cards by registered mail.

All applications go to:

DARC-DX Awards,
Post Office Box 1328
[redacted]
Germany (FRG).

8. New certificate holders will be published in "CQ-DL", the club magazine of DARC.

9. The decisions of the DARC-DX Committee are final.

European Countries List:

C31, CT1, CT2, DL, DM, EA, EA6, EI, F, FC, G, GC Guer., GC Jer., GD, GI, GM, GM Shetland, GW, HA, HB9, HB0, HV, I, IS, IT, JW Bear, JW, JX, LA, LX, LZ, M1, OE, OH, OH0, OJ0, OK, ON, OY, OZ., PA, SM, SP, SV, SV Crete, SV Rhodes, SV Athos, TA1, TF, UA1346, UA Franz Joseph Land, UA2, UB5, UC2, UN1, UO5, UP2, UQ2, UR2, YO, YU, ZA, ZB2, 3A, 4U1, 9H1.

EUROPA DIPLOM

1. The ED is awarded for working (SWLs hearing) amateurs in European countries.

2. Applicants must prove a total score of at least 100 points by submitting QSL cards. The score is computed as follows:

(1) Contacts:

The basic idea of the award is to work as many European countries as possible on different bands in different calender years. There are no restrictions as to modes of operation or specific amateur bands.

(2) Multiplier:

Confirmed contacts of the current and preceding year count 1 point (multiplier 1.0). Older confirmations are devaluated by a quarter point per year (multiplier 0.75, 0.5 or 0.25). QSL cards dating back more than four calendar years have lost their value for the certificate.

(3) Annual Score:

The sum of all confirmed European countries on different bands in a calendar year multiplied by the respective multiplier produces the annual score.

(4) Total Score:

The total score is the rounded sum of all annual [redacted].

(5) Example:

Date of application – June 17, 1972.

	1972	1971	1970	1969	1968	1967
(1) confirmed QSOs	8	48	36	41	21	7
(2) multiplier	1.0	1.0	0.75	0.5	0.25	0.0
(3) annual score	8	48	27	20.5	5.25	0
(4) total score	8	48	27	20.5	5.25	—108

3. **Europa Diplom Honor Roll:**

(1) Each certificate holder with an actual score of at least 100 points will be listed in the ED Honor Roll. The ED-HR arranged according to the scores will be published in DARC's "CQ-DL" twice a year. Members of the Honor Roll are awarded an additional sticker.

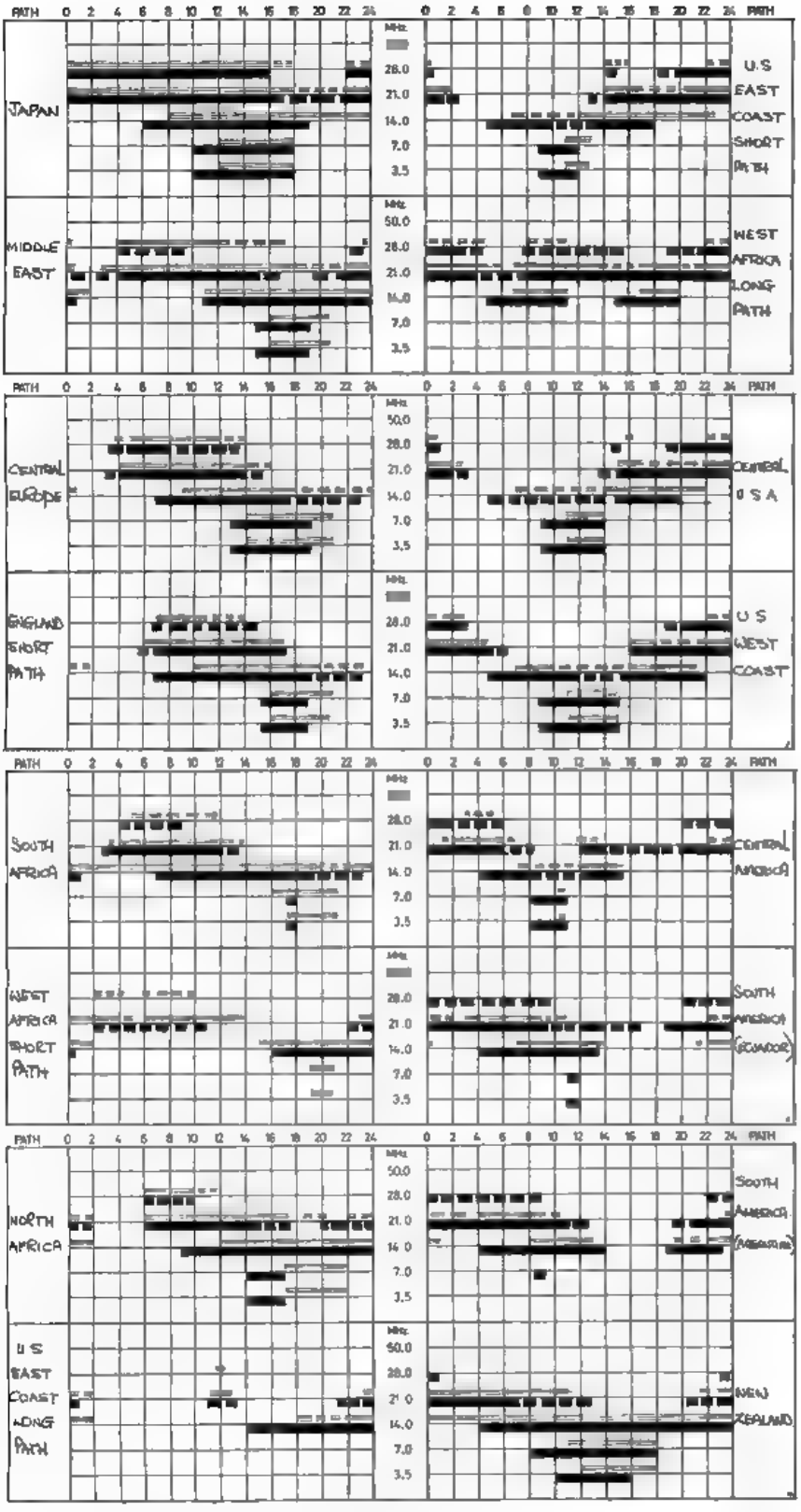
(2) To improve the score suitable QSL cards may be turned in twice a year. Make sure that the award manager receives them before the end of June or December to be considered in the subsequent publication.

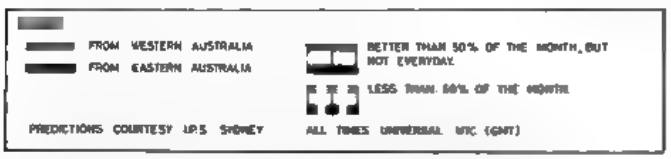
(Rules for the "Worked All Europe" and "EU-DX-D" will be published at a later date.) ■

QSP

THOUGHT FOR THE MONTH

"Those who persistently trigger repeaters without saying anything perhaps would rather have people wonder why they don't say anything rather than come out with a comment and then leave people wonder why they bothered to say anything."—Break-in. ■





Propagation during the winter months has been quite mixed and now having moved into spring conditions the longer skip distances are quite pronounced. Solar activity is still very much up and down very closely coupled to the sun's rotational period (approx 26 days) There has been considerable storm activity and a great many flares with resultant fade outs right through the spectrum. One particular storm on August 27th produced a fine auroral display on August 28th.

The movement of the K-indices produced quite some interesting figures from the classic quiet period and enhancement effect prior to the storm It commenced at 0246 UTC on August 27th and the K indices from Mundaring in Western Australia and Toolangi in Victoria tell an interesting story For the eight 3-hour periods were as follows.

	Time (UTC)							
	00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24
Aug.								
25	1	0	2	3	2	2	2	2
	1	1	2	3	2	2	2	1
26	1	1	1	1	1	1	2	1
	1	1	1	1	1	1	2	1
27	3	3	3	4	5	4	4	3
	3	3	3	4	4	4	3	3
28	3	6	6	5	5	6	5	4
	3	5	7	7	6	5	3	2
29	6	5	7	5	6	3	3	3
	4	4	5	5	5	3	2	2
30	3	4	3	4	5	4	6	4
	2	3	3	4	4	4	6	4
31	4	3	4	4	3	3	2	4
	3	3	4	4	5	4	4	2

Figures shown opposite date — Mundaring — bold figures in second line — Toolangi

Storm finish time was 1600 UTC, August 31

From reports the auroral effect was felt from quite low frequencies up to VHF

Some issues back I mentioned the Ohl/Sargent method for predicting the forward smoothed sun spot number from the geomagnetic activity recorded in the downward position of the previous cycle. One of the notable research centres for geomagnetic activity tested the method against data from the previous cycle They found the method fitted quite nicely into place and calculated that the next peak came up with a smoothed figure of 235, which if it eventuates, will be an all time high.

Researchers around the world are keeping a close eye on all these figures and they generally agree the method shows promise. Should the method prove itself, then the whole field of solar studies will need revision, particularly with respect to forward predictions. It could give a 48 month period of relatively firm data, whereas at this time little effort is given to casting more than 6 month forward predictions

Solar activity is in somewhat of a lull at the time of writing with just short bursts of activity to liven things up. Though the overall levels are rising ever so slowly

Provisional sunspot data from Zurich for June, July, August are 94.1, 68.4 56.7 monthly means.

In June daily counts above 100 were 14 days highest 158 on 22 and 23. July daily counts above 100 were 8 days highest 127 on 11. August just made the 100 on one day, 31

Smoothed running numbers 12-77 — 55.4, 1-78 — 58.6 (Ohl Sargent Prediction 59.6) 2-78 — 62.7.

Zurich predictions for 11-78 — 102, 12-78 — 108, 1-79 — 114, 2-79 — 120

2800 MHz solar flux figures for 5-78 — 147.3, 6-78 — 143.1, 7-78 — 131.7, 8-78 — 114.7 follow very closely the month mean sunspot numbers predicted figures were 5-78 — 149, 6-78 — 151, 7-78 — 150, 8-78 — 148. As always — unpredictable!

As you probably have noticed, we have added some extra paths to the usual list of the past few years. We hope that they will assist users. The parameters used for predictions are taken as when perfect conditions apply over those paths. However, the range of variations likely to occur can be considerable. Within these bars are periods of much larger reflections. Usually those without beam antennas cannot always take advantage of this mode — sometimes the reverse occurs. Your take-off angle will largely govern your propagation during these periods. I am looking at the possibility of refining the charts to greater detail, but think perhaps that East and West take-off could complicate the matter. I will try perhaps for one month to try from Eastern Australia to evaluate results. ■

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CONTESTS

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CONTEST CALENDAR

November:

4/5 RSGB 7 MHz (CW)
4/5 ARRL CW SWEEPSTAKES
18/19 ARRL PHONE SWEEPSTAKES
25/26 CQ WORLD WIDE DX (CW)

December:

2/3 ARRL 160 METRE CONTEST
9/10 ARRL 10 METRE CONTEST
16/
JAN 7 ROSS HULL VHF/UHF MEMORIAL CONTEST

ROSS HULL VHF/UHF MEMORIAL CONTEST RULES 1978-79

DATE:

0001 GMT 16-12-78 to 2400 GMT 7-1-79

The Wireless Institute of Australia invites Amateurs and SWLs to join in this annual contest which is held to perpetuate the memory of Ross Hull who did so much to further VHF/UHF.

A Perpetual Trophy is awarded annually for competition between members of the WIA, and is inscribed with some details of the man the contest honours. The name of the winning member of the WIA for each year is inscribed upon the trophy and that member also receives a suitably inscribed certificate.

OBJECTS

Amateurs from Australia and Territories will endeavour to contact as many other Amateurs as possible under the following conditions

DATE OF CONTEST

10th December 1977, 0001 GMT to 8th January 1978 2400 GMT

DURATION

Any seven calendar days within the dates mentioned above which need not be consecutive These periods are at the operator's convenience. A calendar day is from 0001 GMT to 2400 GMT

RULES

1 There are two divisions, one of 48 hours duration, and the other of 7 days duration In the 7 day division there are four sections.

(a) Transmitting Open
(b) Transmitting Phone
(c Transmitting CW
(d) Receiving Open

An open log is one where points are claimed for more than one mode, e Phone, CW, RTTY, ATV, SSTV (AM, FM and SSB are grouped together as phone)

In the 48 hours division, the best score over any consecutive 48 hour period is the winner

In the 7 day division, the best score over any seven days (not necessarily consecutive) is the winner

2. Any Amateur operating fixed mobile or portable within the terms of his licence may participate

3. All Amateur VHF/UHF bands may be used, but crossband contacts are not acceptable. At any one time, single frequency operating only is permitted. Cross mode contacts are permitted.

4. Amateurs may enter for any one of the sections and either or both divisions. 7 day certificate winners are not eligible for 48 hour awards.

5. Two contacts per band per day, irrespective of mode are permitted provided that at least two hours elapse from the previous contact with that station on that band

6. Logs from a multi operator station are not acceptable. One operator only may operate a station at any one time, and must submit a log for his own operation.

7 Entrants must operate within the terms of their licences.

8. The exchange of RS or RST reports with a serial number starting at 001 and advancing by 1 for each successive contact will be proof of contact.

9. Entries should be set out on Quarto sheets, using one side of the paper only, and must be forwarded to reach the Federal Contest Manager, Wireless Institute of Australia, Box 67, East Melbourne, 3002 in time for the last opening of logs on Friday, February 17th. Envelopes should be clearly marked Ross Hull Contest Early logs will be appreciated.

10. Scoring will be based on the following table

Freq. MHz	Less than 200 km	More than 200 km within Call Area	More than 200 km other Call Areas
52	2	5	10
144	2	5	10
432	5	15	25
576	10	25	50
1296 and above	20	50	100

Bonus points Each new call area contacted, 20 points, once only per band per day (including own call area).

Operation via active repeaters or translators not permitted for scoring purposes

11 Logs should be set out as in the example and must carry a front sheet showing the following information

Name
Address
Section
Call sign
Claimed 7 day score
Operating days
Operating dates
Highest 48 hours score
Operating period

Declaration — I hereby certify that I have operated in accordance with the rules and spirit of the contest.

Comments

12. All times to be logged in GMT only

13. Awards Certificates will be awarded to the highest scorers in each section, in each call area. Additional certificates will be issued to contestants who break any VHF/UHF record during the contest

The VK contestant who returns the highest score in the transmitting section, and who is a member of the WIA will have his name inscribed on the trophy which will be held by his Division for the prescribed period.

Certificates will be awarded to the highest 48 hours entrants in the transmitting section, who have not won a 7 day certificate

RECEIVING SECTION

1 SWLs only may enter for this section.

2 Contest times and logging of stations will be the same as the transmitting section except that there will not be a 48 hours section.

3. Logs must show the callsign of the calling station, the serial number given, and only the callsign of the other station. Scoring will be as for transmitting stations.

4. Any scoring contacts may be logged. There is no limit to the number of times that a station may be logged provided that serial numbers are given

5. The logs for any 7 days may be submitted and the winner of the section will be highest scorer

6. Certificates will be awarded to the highest scorer in the contest, and if sufficient interest is shown, to state winners.

GENERAL

It is preferable that complete logs be submitted as an aid to checking, but contestants must clearly show their best 7 days or 48 hours.

Enjoy yourself in another friendly contest and remember — it is only as friendly as you make it

EXAMPLE OF A VK3 TRANSMITTING LOG

Date/Time GMT Dec 78	Band MHz	Emission	Callsign	RST sent	RST rec.	Points	Bonus
0156	52	SSB	VK4DY	59001	58037	10	20
0207	52	CW	VK4XA	569002	579012	10	—
0212	144	SSB	VK7ZAH	58003	58026	10	20
0216	432	SSB	VK3ZBB	59004	59042	5	20
0320	1296	SSB	VK3ATN	53005	52023	50	20

IARU NEWS

RECIPROCITY OF LICENCES

Much detail was published on page 25 of AR Jan. 1978 on the subject of reciprocal licensing

An up-date of that might be useful

For intending residents of Australia the list of countries with which the Australian Administration has reciprocal arrangements remains unchanged to see AR for August, 1972

There is also no change concerning "guest licensing" — i.e licences to temporary visitors to Australia Guest licensing according to one informant, has now become more extensive irrespective of whether or not a reciprocal agreement exists. Apparently visiting amateurs can obtain amateur licences not only in Australia, but also in Botswana, Belgium, Brazil, France, West Germany, Israel, Luxembourg Morocco, Portugal (maximum 30 days), Rhodesia Swaziland and Sweden Some of these countries require proof of 12 w.p.m. morse qualification and have no 'no-morse' licence grades

It would appear as if you cannot obtain a U.K. reciprocal licence unless you can produce a current licence, and your passport to show that you are a national of the country where your licence is current

According to another source applications for a U.S.A. amateur licence by aliens of the U.S.A. must be made to the FCC Gettysburg PA 17325 instead of to Washington

The U.S.A. now has reciprocal agreements with 50 countries Add Liberia and Greece to the list The FCC form to use is 610-A

FRANCE

From 'Mobile News' of July 1978 comes the news that a reciprocal licence for G stations in France which was free, now costs francs 117.50 This is calculated as 250 times the cost of a local telephone call and is for one year

WARC 79

Radio Communication of July 1979 sets out brief details of the UK preparatory draft for WARC 79 as affecting the amateur service in that country One or two extracts might be found interesting as pointers towards the enormous problems of frequency allocations

In relation to the band 4 to 30 MHz 'radio amateurs have asked for an extension to one of their existing bands and an addition of several fairly wide new bands' The comments were — 'It should be mentioned that should the proposed reductions in fixed service requirements not be realized at the 1979 WARC the extra provision proposed for other services may not be realized in full This will depend partly on the reaction of those developing countries whose use of the HF bands for fixed services is still vital particularly in the bands below about 10 MHz'

Relating to 30-108 MHz it states — 'In Region 1 there is no internationally allocated amateur service band in this part of the frequency spectrum The 70 MHz allocation in the U.K. is the subject of national, not international regulations "Radio amateurs (and ISM) interests have also asked for extra provisions in the existing television Band 1 Until the future of Band 1 is clearer it is not possible to say whether these needs can be satisfied'. ■

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204-BA 20M 4 el Tiger array 26' boom	$230
HY-QUAD 10-15-20M full size Cubical Quad	$260
2M 8 el. Yagi with balun 12'6 " boom	$30
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In-line splice RG-8U & RG-58U	75c
SO-239 chassis connector with 2 hole mounting	75c
Right angles & T-connectors	$1.50
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Mic. sockets chassis & in-line, 3 & 4 pin	85c
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No. 14 hard drawn copper wire — per meter	10c
¾" H.D. foam coax extra low loss — per foot	$1
Type RG-8U foam coax — per yard	80c
Type RG-58U coax — per yard	30c
8 core rotator cable — per yard	65c
KEN KR-400 rotator with 28V AC control box	$125
CDR HAM III rotator with 28V AC control box	$175

SUNDRIES:

FRG-7 5-30MHz General coverage receiver	$350
ICOM IC-202 2M SSB portable transceiver	$175

KENWOOD PRODUCTS:

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TS-820S 10-160M SSB/CW w/Digital readout	$1100
TS-700SP 2M all-mode transceiver	$800
TR-7400A 2M transceiver	$475
TR-7500 2M transceiver	$275
DG-5 Digital display for TS-520S	$200
TV-506 6M transverter	$225
TV-502 2M transverter	$250
AT-200 Antenna matchbox	$175
DS-1A DC-DC converter	$70
DK-520 adaptor for DG-5 to TS-520 use	$20
LF-30A low pass anti-TVI filter	$30
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SP-820 external speaker for TS-820S	$60
SP-520 external speaker for TS-520S	$30
YG-88C CW filter for TS-820S	$55
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MC-10 hand-held microphone	$20
MC-50 desk microphone	$45
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SM-220 Station monitor	$300
BS-5 (TS-520S) & BS-8 (TS-820S) pan adaptors for SM-220	$55
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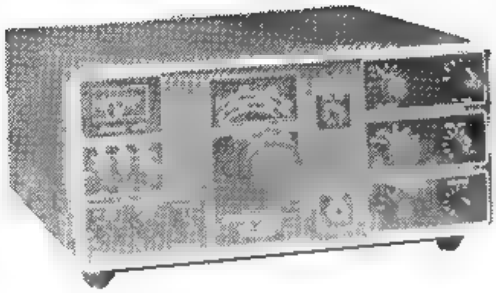

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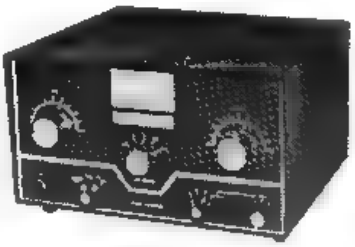

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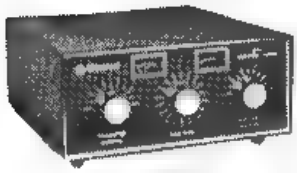

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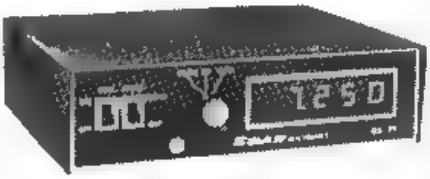

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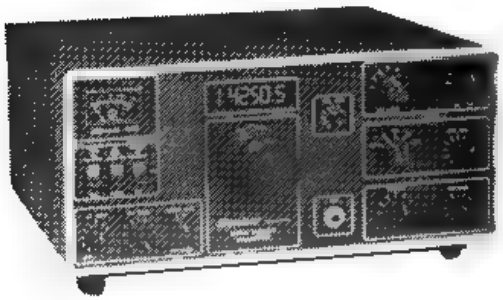

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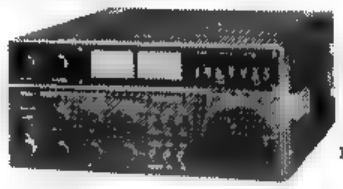
CS401	4 Position, high pwr, up to 500MHz, Commercial Qual.	49.50
	SWR/PWR METERS:	
VCE	Twin Meters, 3-150MHz with Calibration [illegible]	54.00
OSKERBLOCK	SWR200, 3-200 MHz, 2/20/200/2000w	75.00
SW410A	UHF 140-500MHz Direct Reading	105.00
SW210A	1.8 thru 150MHz 20/120w Direct Reading, Professional	85.00
SWX777	Professional 1.8 thru 30MHz Direct Reading	131.00

ICOM

MODEL	DESCRIPTION	PRICE
IC701	HF Solid-State 160-10 m Transceiver	1,580.00
IC701PS	Matching Power Supply/ Speaker for above	245.00
IC202E	2 m SSB Portable 5 watts	219.00
IC402	6 m SSB Portablem 5 watts	219.00
IC225	2 m fm Synthesised Transceiver	299.00
IC211	2m All-Mode Transceiver, AC/DC	735.00
IC245	2 m fm Digital Mobile Tranceiver	465.00
	-SSB Attachment for above	142.00
IC402	70 cm SSB Portable Tranceiver	
RMT/3	Remote Controller for IC701/211/245	169.00
	Crystals for IC215/22 Series (Pair)	10.00
	Crystals for Oscar (IC202E (Each)	7 50
BC20	Nicad Pack & Charger for Portables	59.00
IC5N2	Condenser—Electret Desk Microphone for ICOM Rigs	56.00
	Brackets for IC225 Series	17 50
	Brackets for Portables	18.00



IC211

RTTY EQUIPMENT

WE CARRY RECONDITIONED PAGE PRINTERS, TAPE PERFORATORS, TAPE DISTRIBUTORS, DEMODULATORS, LOOP SUPPLIES, ETC.

15	Page Printer 110V	150.00
14	Tape Reperforator 110V	[illegible]
14	Tape Distributors 2 Heads 110V	[illegible]
[illegible]	Demodulatro fully build up 170Hz-850Hz	[illegible]
[illegible]	Demodulator Kit Inclusive 12V Power Supply, Meter, all Plugs & Connections	150.00
[illegible]	Oscillator, Fully built up Kit includes 6V Power Supply X-Tals for 170 and 850 Hz	[illegible]
	SLOW SCAN T V	
OM-7M	Ham Vision Monitor 4 inch Monitor Screen	
OM-7C	Ham-Vision Camera	1400.00
	LOW PASS FILTERS (DAIWA)	
FD50M	52MHz Fc, 1Kw 5 stages, good qual	33.00
FD50LS	52MHz Fc, 1Kw 5 stages, good qual	29.00
	OMEGA NOISE BRIDGE	
TE7-01	Up to 100MHz	44.00
	POLAMAR PRODUCTS:	
	IC Keyer	149.00
	VLF Converter	89.00
	Receiver Noise Bridge	79.00
	QM70 PRODUCTS:	
	432/144MHz Converters	59.00
	432/28MHz Converters	59.00
	144/28MHz Converters	59.00
	1296/28MHz Converters	79.00
	28/144 "SCORPION" high power Transverter	225.00
	2m Linear amp 70w max pep	129.00
	2m/432MHz Transverters	125.00
	COMPRESSORS & PROCESSORS (DAIWA)*	
RF440	Speech Processor, phasing type, 6dB Gain	125.00
[illegible]	Speech Processor, Crystal Filter Type, 6dB Gain	165.00
	MORSE KEYS (HI-MOUND):	
[illegible]	Delux Key with Marble Base	35.00
HK708	Economy Key	21.00
HK706	Operator's Key	25.00
MK701	Manipulator (Side-swiper)	45.00
[illegible]	Electronic Keyer	165.00
	MICROPHONES:	
VM-1	Noise-cancelling, Dynamic, Low Z	9.50
[illegible]	Desk Mike with Pre-amp, Dynamic, Low Z	29.50

TWO GREAT STATE-OF-THE-ART RIGS

1.

ICOM

IC-211
2m
All-mode

SMALL ENOUGH FOR MOBILE!

Maximising 4MHz – the full 2 metre band with fully synthesised multi-mode operations, the IC211 is the most advanced, highest quality 2 metre transceiver available anywhere The IC211 comes complete with ICOM s single-knob frequency selection and two digital VFO functions, standard features at no extra cost.

The large weighted flywheel knob mounted with low friction ball bearings is used to drive an optical chopper to provide pulses to the synthesisers LSI which shows a full 7 digit readout. A breaking mechanism which operates electrically, engages to provide a smooth feel at slow speeds, and a "dial lock" button holds the reading at the time it is pushed, even though the knob continues to rotate

The IC 211 incorporates computer compatible interface via the 24 pin accessory socket on the rear panel which enables PIA connection for the microprocessor buff

The IC211's synthesiser steps are displayed, with positively no time lag, backlash or uncertainty in display stability, in increments of 100 Hz or 5 KHz from 144 146 MHz, and in 5 KHz from 146-148 MHz for FM operation Any offset from 10 KHz through 4 MHz for repeater use can be programmed

The IC211 contains both 240vac and the 13.6vdc power supplies and has a built-in high SWR autopower control Variable output power contributes to the IC211's versatility Output between 500 milliwatts and 10 watts may be front panel controlled on FM

More of the maximiser's built in standard features include a pulse type IF noise blanker; front panel discriminator meter, SWR meter VOX with adjustable VOX gain delay and antivox, CW monitor volume level; and semibreak-in CW operation

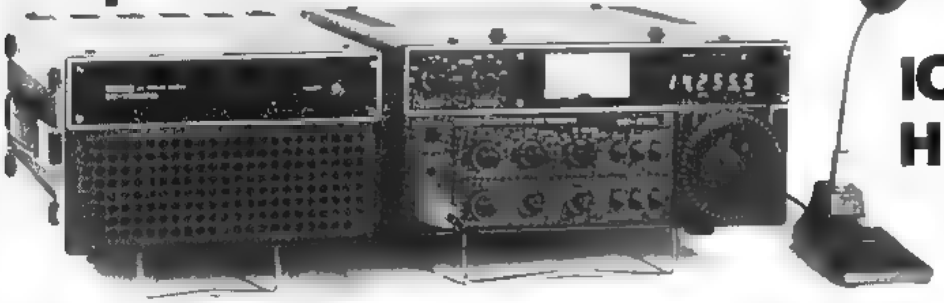
And your new IC211 carries the VICOM 90 day warranty backed by spare parts and technical expertise

COMPARE THE IC211 WITH THE OTHERS'

Price $785

computer compatible

2.



IC-701 HF

ICOM's superior LSI technology takes the lead in Amateur HF. The extremely compact **IC-701** delivers 100 watts output from a completely solid state, no tune (broad band design) final, on all modes and all bands, from 160-10 M With single knob frequency selection and *built-in dual VFO's*, the LSI controlled **IC-701** is the choice in computer compatible, multi-mode Amateur HF transceivers

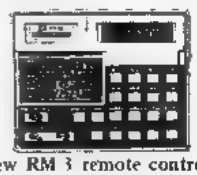
The **IC-701**'s single frequency control knob puts fully synthesized instant tuning at a single finger tip. **WIDE** bandspread, with 100 Hz per division and 5 KHz per turn, is instantly co-ordinated between the smooth turning knob and the synthesizer's digital read-out with positively no time lag or backlash (no waiting for counter to update less operator fatigue) And at the push of the electronic high speed tuning button, the synthesizer flies through megacycles at 10 KHz per step (500 KHz per turn).

The computer compatible **IC-701** LSI chip provides input of incremental step or digit-by-digit programming data from an external source, such as the microprocessor controlled accessory which will also provide remote band selection and other functions.

Full band coverage of all six HF bands, and continuously variable bandwidth on filter widths for SSB, RTTY, and even SSTV, help to make the **IC-701** the very best HF transceiver ever made **IC-701** includes two CW widths, all of this standard at no extra cost

Sold complete with the high quality electret condenser base mic (SM-2) the **IC-701** is loaded with many ICOM quality standard features. Standard in every **IC-701** are *two independently selectable, digitally synthesized VFO's at no extra cost* Also standard are a double-balanced schottky diode 1st mixer for excellent receiver IMD, and RF speech processor, separate drop times for voice and CW VOX, optionally continuous RIT, fast/slow AGC, efficient IF noise blanker, fast break-in CW, and full metering capability.

Price $1380 (AC power supply extra)



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PH (03) 699 6700 Telex AA30566

Sydney	681.3544	Perth	446.3232
Brisbane	38.4480	Adelaide	43 7981
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The new RM 3 remote controller is microprocessor controlled for direct frequency dial-up, scan and memory functions. Price $169

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher

211 Hopetoun Avenue,
Vaucluse Sydney, 2030.
25 9 1978

The Editor,
Amateur Radio.

Dear Sir,

I have had a certain amount of difficulty with my local Council regarding my application to erect an antenna on my own property

I eventually submitted the plan as attached to this letter and you may if you so wish publish this plan if you think that it would be of assistance to other Hams

I also had an objection from a neighbour, I persuaded the neighbour to come in my car and took him to see a similar antenna (already erected), he then withdrew his objection, so it would appear to be a good plan to show any objectors what the finished result looks like

I trust that my experience will be of help to anybody contemplating the erection of an antenna in the future.

Yours faithfully
Les Simons VK2NLE. ■

Erik W Bierre VK2BEK
Apt 8, 66-68 Florence St.,
Hornsby 2077

The Editor

Dear Sir,

Perhaps you may be interested in the following. About 8 months ago I received a letter from a young man in the U.S.S.R. He was about 26 years of age, married with a young daughter and he was a teacher of English in a smallish town.

He said he got my name and address from a U S S.R ham I had worked and said he was anxious to have a pen friend in Australia.

Well, we passed several letters back and forth and I sent him a book of coloured views of Sydney. I sent it by air mail, but it was never received.

I then asked him in a letter if he would be allowed to receive a letter from me recorded on a cassette. He replied that would be fine and he would like to hear my voice.

So I recorded this — it was full of simple things about life in Australia — our Sydney climate — our wine industry etc Then said to him that as a radio ham I had many friends all over the world and frequently had long, interesting conversations with them. But when I contacted hams in the U.S.S.R., all I ever got was "thank you for the call, your signals such and such a strength, my QTH is so and so, the box is so and so, Thank you for a FB QSO please QSL". I said "it would be much more interesting if we could have longer conversations, is it that they are not allowed longer conversations? Or is it that they do not know any more of the English language?'

I sent this letter by air mail about four months ago and have never heard from him since. But yesterday, I received my tape back in the original packing It had been opened by the U.S.S.R. authorities, tied up with string and the knot sealed with sealing wax with the imprint of U.S.S.R. on it

Just the tape, nothing else ■

Mount Victoria Police Station, N.S.W.
22nd September, 1978.

The Editor,
Amateur Radio,

Dear Sir,

On the 25th August, 1978, a Mrs. Thelma Clee, O.B.E., suddenly collapsed and died at her residence at Mount Victoria in New South Wales and this was at the time that telephone communications had broken down in most states.

At that time I was approached at the Mount Victoria Police Station to inform the relatives of the late Mrs Clee of her death and at that time the Police Station was suffering also with a total communications breakdown.

The only communications I had at the time was my own Amateur Radio Station which is on the Police Station premises and as there were several States to be notified I called these states for assistance.

All messages were delivered via Amateur Radio to Police Stations in the States concerned and I would like to thank on behalf of Mr Bill Clee of Mount Victoria, the husband of the deceased, and myself, to all amateurs who were involved in relaying these most compassionate messages, particularly VK7NFR, Fred VK2BLP, Laurie VK4UF, Doug VK4NGE, Reg VK2PT, Allen VK2NHN/4, Vern and all other Amateurs that I have neglected to mention Thank you most sincerely

Yours Sincerely,
Paul Robertson O.I.C. VK2NIZ
Mt. Victoria Police Station, N.S.W. ■

16 Hilton Avenue,
Lakemba 2195.
August 31st, 1978.

The Editor,
Dear Sir,

Our VK2 Minibulletin requests operators to operate amateur equipment donated by a Sydney electronics firm and which would help promote AR.

By all means promote AR and my services are available to any worthwhile cause, but in this instance I would be operating "tongue in cheek"

The donor did a great deal towards flooding the market with CB radio, and I doubt very much any genuine interest in AR as such.

Am I a bigot? Only to the extent that I value the AR licence and oppose any means whereby it could be downgraded, and any publication which advocates and condones the illegal use of radio equipment.

Along these lines, Amateur Radio Action publication is lacking, and has already been the loser by not getting the full backing of a lot of amateurs.

What about that amateur who was set upon by those CB idiots? Did the WIA do anything to help?

Yours faithfully,
G Lanyon VK2AGL. ■

The Editor,
Dear Sir,

I am 30 years old, technical engineer in metallurgy, working in a steel plant (Sidmar, Ghent), married, father of a son (2 years) and interested in radio amateurism. I am studying momentarily electronics and radio-electricity to undergo in September an examination to obtain a licence. I have still no equipment Radio amateurism is exercised in Australia, too, and as I am interested in the Australian people, country and way of life, I should like to correspond with a radio amateur to exchange some books and periodicals; maybe we can make QSOs when I am licensed.

Yours faithfully,
De Moor Marc, Vredestraat 13, B-9720 De Pinte, Belgium, Europe.

Marc's address is quoted if any of our readers would like to correspond with him.—Ed. ■

10 David Street East,
Springwood 2777
3rd September, 1978

The Editor,
Dear Sir,

Each year the Institution of Radio and Electronics Engineers in this State offers two Efficiency Pennants for competition by Radio Clubs registered with the WIA (NSW) Education Service. This arrangement has been "running" for many years with respect to the Youth Radio Service, which has now been incorporated into the wider Education Service framework.

Determination of the winning School and Non-School Radio Clubs is on the basis of "Efficiency Points" on a prescribed scale with points for each YRS Certificate, each Novice examination subject and each AOCP subject gained by Club members.

The Pennants earned for the 1977 Training Year by successful Clubs are: (i) Non-School Club — Blue Mountains Amateur Radio Club; (ii) School Club—Marist Brothers High School, Eastwood.

Arrangements are in hand for representatives of these Clubs to receive them from IREE officers. Brother Cyril Quinlan (VK2ACQ) has been engaged in Youth Radio Service and Radio Club activities for many years and has conducted very effective School and Radio Clubs in various Marist Brothers' High Schools. The Blue Mountains Amateur Radio Club has been operating Novice classes ever since the introduction of this grade of amateur licensing, and conducted the very first Trial Novice examination in 1975. The Trial Novice idea "caught on" and now is a regular feature of the WIA (NSW) Education Service's programme.

Yours faithfully,
Rex C. Black VK2YA,
WIA (NSW) Education Service. ■

10 Milan Terrace,
Stirling, SA 5152
8/9/78

The Editor,
Dear Sir,

I had a crack at the Ch 5A beast. I decided to use a different argument, I wrote to the Hon the Minister and pointed out that Ch. 5A was not an international television channel I also pointed out that many satellites used this frequency and listed a whole raft of them.

I told the Hon. gentleman that clobbering satellites was no way to win friends at home or abroad, and pointed out to him that his department had already messed up the FM band by using it for television, and suggested that it wouldn't be a good idea to repeat such an error

Well, I got a reply which told me that these matters would be considered and a detailed letter would follow It must have gone into the too hard basket because I have heard no more.

I have found that Government departments will do what they are going to do, no matter how absurd. The only thing that affects a politician is votes. Fears of losing that vast salary and fat pension produce immediate action. Nothing else counts. I hate to be a wet blanket, but that's how it is.

David S Robertson VK5AN. ■

34 Toolang Road,
Alphington 3078
17th September, 1978

The Editor,
Dear Sir,

In view of the problems connected with Novice examinations, the threat to the two metre band from Ch. 5A, the coming WARC conference and the growing pirate market for amateur equipment one would think there would be a strong incentive for all amateurs to get together to try to work out some answers to these threats to their continued existence. Unfortunately this does not seem to be the case.

A number of clubs in the Melbourne area have been meeting to discuss various matters affecting their interests. This in itself could be a good thing except for the fact that they have rather pointedly avoided asking along any representative of the Victorian Division of the WIA. A recent meeting on the 16th September was fairly widely publicised as was the fact that on the agenda there was to be a discussion as to whether — in view of the growing numbers and strength of the clubs — the WIA was any longer necessary. Although I had not been invited I felt that, as club and zone co-ordinator of the Victorian Division of the WIA, I could at least turn up at the meeting and learn something of the feelings and perhaps offer some ideas on this particular matter.

When I arrived, however, I found that it was apparently to be a highly secret affair and, after some discussion, and a show of hands, and a casting vote by the chairman, I was kicked out of the meeting I happen also to be a member of one of the clubs which was represented at the meeting, so it seems that not only anyone from the WIA but also the members of the clubs themselves are not allowed to know what their elders and betters are discussing.

It is rather pathetic to find that just when the WIA is shaking off some of its past weaknesses

and narrow attitudes, these seem to have been inherited by the clubs. It is hardly likely that the WIA will be affected in any way by a mild attack of megalomania among some of the leaders of a handful of local clubs, but it is most disheartening to see a cloak and dagger circus replacing what should be a co-operative effort to try to work out how each group could best play its part in working to help amateur interests — and they certainly need helping! — as a whole.

Sincerely,

Roy Hartkopf VK3AOH. ■

RTTY NOTES

The NSW RTTY group has been restructured to represent all the RTTY operators. Not only those in NSW but in all of Australia, and has been renamed "The Australian National Amateur Radio Teleprinter Society". It is thought that as a national society we can assist the amateur RTTY operators in Australia to become more active in the mode and to help them become more proficient with the modern technology.

We have been running a Sunday broadcast for the past year on RTTY. Broadcast number 52 was radiated on 3rd September. This is the only official RTTY broadcast in Australia and incidentally one of only four official RTTY broadcasts throughout the world. For the broadcast we use the recognised international amateur standards of 45.45 bauds and a shift of 170 Hz. There are other standards for other services, but as amateurs we use the world-wide amateur standards, which is only logical and the international frequencies of 7045 kHz, 14090 kHz and 146.5 MHz at 0030 GMT on Sunday mornings and 3545 kHz and 146.5 MHz at 0930 GMT on Sunday evenings.

With the use of these frequencies we have a complete coverage of Australia and the surrounding islands which of course makes us very happy. We have had requests for permission to rebroadcast the news on other frequencies. This matter is being looked into and as soon as formalities are completed it is possible that there will be a rebroadcast of the RTTY news in each capital city. The society feels that this would assist all members, not only in receiving the news, but to adjust their equipment to the correct amateur standards.

In NSW two RTTY repeaters are in the process of being activated, one in Newcastle and one in Sydney. Both these repeaters will be able to be used for the rebroadcast of news but they will also provide a standard signal for line-up of equipment. Neither of them will accept Phone or CW signals.

There are now well over 250 amateurs actively interested in RTTY throughout Australia. Most of them have become interested over the past 12 months though a great number seem to be only interested in receiving and not transmitting. But it is hoped that in the near future more will start transmitting. We need more signals on the air to make our presence felt. Just because you cannot type, or type fast, is not a good excuse. We all had to learn to type and the only way to find out where the keys are is to use them. The more that you use them the better you will become. You will find that the chaps on the air will be very patient with you and will help you in all kinds of ways to improve your typing. The act of getting on the air and using the keys is the start to good typing. We know that you are in there listening, so why not get on the air and let us all hear you.

By the time you read this the VK/ZL/Oceania RTTY contest will be over. We hope that you sent in an entry, be it ever so small, for every entry counts. It was our first venture in the RTTY contest field and we hope that we will be able to make it a yearly event and that you will all come to the party and help us make it a big contest. But it is over for this year and the results will be available early in 1979. If it was your first contest and you had some fun and a lot of experience, well there are more to come. Every time you have a contact or enter a contest you are gaining experience, your operating technique is improving, and after all that is what it is all about. If you did have a contact during the contest, please let us have your log, if for no other reason than it can be used as a check log to see that all entries are correct.

The next contest for this year is the WAEDC European contest which will be held on the 11-12th November. The operating times are 0000 GMT Saturday to 2400 GMT Sunday. Operations on all bands 3.5 MHz to 28 MHz. Though the contest is for 48 hours you are not permitted to operate for more than 36 hours. The 12 hour rest period may be taken over one but not more than three rest periods and all rest periods must be marked on the logs. Exchange of number is RST plus three figures for the QSO number, thus 599-001 for the first contact. Also there are extra points for QTC exchanges. QTC is the report of a previous QSO to a European station that you are working. As each QSO can only be reported once a different QTC must be sent each time. A maximum of 10 QSOs may be sent in each QTC. Each QTC must be in sequence. Thus when sending a QTC you must indicate QTC 3/7, that is, QTC number three and has seven QSOs reported. Score one point for each contact and one point for each QTC reported, multiplied by the number of countries that you have worked on each band. Only one contact is allowed with each station on each band. I know that it all reads very complicated but when you get into the contest and see what the other chap is doing it will all work out for you.

And finally the society has kits for demodulators, modulators, filters and other kits for RTTY work. So if you are interested please contact the society at 14 Atchison Street, Crows Nest, Sydney, and ask for information about them. If you wish to receive the newsletter of the society please forward two dollars to the above address and you will receive the newsletter every two months.

S. E. Molen VK2BG,
Broadcast and Publicity Officer ANARTS. ■

MAGAZINE INDEX

Syd Clark, VK3ASC

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A 2 Metre Linear Amplifier; Some Considerations for the Specification and use of AT Quartz Crystals; Modifications to the Yaesu FT101 to Cure Strong Signal Overload, Radio Activities at the Third Asia-Pacific Jamboree; The AMSAT-OSCAR D Spacecraft.

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The Jamboree Kitset Radio; Antenna Coupler; 100-220 watt Transceiver Power Supply (12V, 10-20A); The SWR Bridge in English; A Few Comments on the ICOM Model IC701 HF All Band Solid State Transceiver

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HAM RADIO June 1978
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RADIO ZS May 1978
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BREAK-IN June 1978
The Jamboree Kitset Radio; Antenna Coupler; A 100-220 watt Transceiver Power Supply (12V, 10-20A), The SWR Bridge in English, A Few Comments on the Icom Model IC701 HF All Band Solid State Transceiver, Orbital Predictions for OSCAR 7 and 8

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SHORTWAVE June 1978
Amateur Radio — Communication or Technology, or Both And it had an Ivory Knob, A Digital Frequency Meter

The Magazine Index is very short this month due to the delay of magazine arrivals attendant upon the wharf strike. ■

QSP

STATISTICS — AMATEUR STATISTICS
The 30th June 1978 comprehensive statement issued by the P & T Department shows 9400 licensed radio amateurs in Australia. This is 1577 more than 30th June 1977. Leaving aside 22 stations licensed in the external Territories (20 full, 1 restricted and 1 Novice) full licences totalled 5359 (up from 5000), limiteds 2689 (up from 2362) and Novices 1320 (up from 4148). The number of stations in each State was (figures in parentheses are full, limited and novice in that order) — N.S.W. 3312 (1924, 821, 567), Vic. 2615 (1459, 902, 254), Qld 1071 (605, 341, 125), S.A. 1054 (567, 301, 186), W.A. 706 (429, 177, 100), Tas. 321 (186, 91, 44), A.C.T. 204 (147, 36, 21) and N.T. 95 (52, 20, 23). ■

1979 SUBSCRIPTIONS

- **WIA Members are reminded that 1979 Subscription notices will be mailed out during December.**
- **1979 is the year of the great WARC when amateur radio and the WIA will need every ounce of support — so please arrange early payment of 1979 subscriptions when you receive the notice.**
- **Members wishing to be re-graded as pensioners — write NOW for clearance — write to your Division NOW.**
- **New members joining in 1978 — you will receive a notice for a pro-rata amount to render you financial to 31st December 1979. Early payment of this will avoid problems with AR.**
- **All members are reminded that AR address labels will be automatically suppressed for those still remaining unfinancial after a short period of grace.**
- **ADDRESS CHANGES, CALL-SIGN CHANGES, OTHER CHANGES: Write NOW to WIA, Box 150, Toorak, Vic. 4132, advising all changes—please do not wait for subscription notice to reach you.** ■

HAMADS

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Dentron 80-10AT Random Wire Antenna Matcher, $70. Len VK2NYE. Ph (046) 77 1484

Kenwood TR7200G VHF/FM Transceiver, complete with all accessories and English instruction manual, crystals for Channels 8 and 50 in perfect order, unit has never been used as mobile. $135 Ross Treloar VK2BPZ Ph. (02) 239 5267 office hours.

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R1155, BC348 and 1674, any parts, sub-assemblies or ccts., also ch. & Rx xtal for 1674. Replies to Dave Morrell VK5NDM. Ph. (08) 225 6647, Bus., or (08) 44 4226 A.H.

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HT32 Transmitter. Price and condition. VK3ACN, QTHR

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OBITUARY

KEN GILLESPIE **VK3QK**

Ken passed away on 23rd September, 1978, after suffering a long period of illness.

Ken was one of the "younger" oldtimers, and he saw active service with the Merchant Navy in World War II as a ship's radio operator.

He later joined the Victorian Railways as a signaller but retired early due to ill-health.

He was an excellent CW operator and an avid home brewer.

Ken, who was well known to many of Australia's amateurs, will be remembered for his active involvement with Institute affairs.

For over 12 years Ken was associated with the publications committee of Amateur Radio magazine and his talents as a draftsman were widely known.

In recent years, Ken's health deteriorated, however he still attended the monthly committee meetings in an advisory capacity.

He was active on the committee up to time of his death.

One of Ken's greatest achievements was in the operation of and his total dedication to the Melbourne Science Museum's [redacted]

Ken was one of the driving forces behind the original installation and daily functioning of the station. He enjoyed meeting members of the public and promoting amateur radio.

Ken often mentioned the lack of voluntary assistance given by other amateurs in helping to maintain the daily operation of the station, and one of his last requests was that we bring to everyone's notice the importance of this station.

It is often said that no one is irreplaceable, and this statement is quite true, but in Ken's case from his most active association with the Institute, the job will be that much more difficult.

On behalf of the WIA Executive, the WIA Victorian Division, and the AR Publications Committee, we extend our deepest sympathies to Ken's wife and family, and to all who were associated with him.

Bruce Bathols VK3UV

In accordance with Ken's request, if any amateurs can offer some assistance for a short period of duty each month at the Melbourne Science Museum Station VK3AOM, please contact Paul Tozer VK3AAO, Ph. (03) 299 1468, or the Victorian Division Rooms (Ph. (03) 41 3535), 412 Brunswick Street, Fitzroy.

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. J. HARVEY	**VK4ZJO/NJH**
Mr. W. H. PETERSON	**VK5LW**
Mr. R. W. S. HUGO	**VK6KW**
Mr. K. L. GILLESPIE	**VK3QK**
Mr. L. F. CLARK	**VK7CK**

LEOPOLD FRANCIS CLARK **VK7CK**

Radio amateurs around Australia and indeed in many countries throughout the world will be saddened to hear of the sudden passing of Leopold Francis Clark, VK7CK. "Poley" as he was known, died at his home at Lansna on the Tamar River in nothern Tasmania on September 15th, 1978. He was aged 77.

To my knowledge, Poley received his AOCP in early 1932 and was active from his home at Upper Natone on the North West Coast where he was engaged in farming.

It was this location that Poley constructed and operated his own electricity supply by harnessing the waters of a small creek on the property and using a small water turbine coupled to an ASEA alternator.

This electricity supply was used to power machinery on the farm and also to run the various rigs that Poley used At this time, the antennas used were mainly long wires and end fed arrays.

Poley was a member of the Old Timers Club and had travelled extensively throughout the world meeting his radio contacts in person. His operation on the bands identified him as one of the gentlemen of the air, kind and courteous and always more than ready to assist his fellow amateurs and newcomers to the band.

To Poley's wife Ella and to all the members of the family, we extend our deepest sympathy.

M. G. Burleigh, VK7JU ■

ADVERTISERS' INDEX

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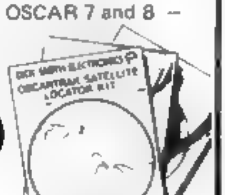

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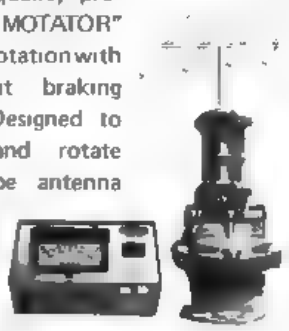
The high quality professional "EMOTATOR" Powerful rotation with independent braking systems. Designed to support and rotate YAGI type antenna



EMOTATOR ROTATORS

103LBX. Medium Duty.	$169.
502CXX. Heavy Duty.	$243.
1102MXX Extra Heavy Duty.	$369.
1103MXX Extra Extra Heavy Duty.	$395.
502 Mast Clamp.	$32.
103 Mast Clamp.	$22.
VCTF-7. 7 Core Cable.per Metre.	$1.20
VCTF-6. 6 Core Cable.per Metre.	$1.00.

DIAWA

DR-7500S. Medium Duty.	$180.
DR-7600D. Heavy Duty.	$248.

ANTENNA COUPLERS.

HC-75, Tokyo Hy-Power Labs,Transmatch 75W PEP	$79.
HC-250, Tokyo Hy-Power Labs,Transmatch 250W PEP.	$100.
HC-500A, Tokyo Hy-Power Labs.Transmatch 500W PEP inc.160M.	$142.
HC-2500, Tokyo Hy-Power Labs Transmatch 2.5Kw. PEP	$199.
AT-200. Kenwood. 200 Watts.	$174.
FC-301 Yaesu.500W Inc SWR and PWR Meters.	$239.
FC-901 Yaesu.500W Inc SWR and PWR Meters.	$269.

MORSE KEYS.

HK-707, On standard base with dust cover and knob.	$25
HK-710, De Luxe heavy duty morse key.	$49.
TC-701 Practice keyer with built in Osc.	$21.
EKM-1A. Morse Practice Osc.	$16
HK-706, Operators key with dust cover	$24
HK-708, Operators key	$23

MISCELLANEOUS ACCESSORIES.

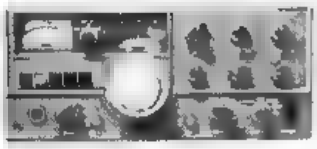
SWR-200. Large dual meter SWR	$78
S90G. 5 position coax switch.	$39.
Diawa 2 Pos. Coax Switch	$25.
LP-42 Drake Low Pass Filter 200W	$25
TWS-120. 2 Posit on slide coax switch	$18.
M330. Diawa Mic compressor	$70
5D-fb. Foam filled coax double shielded 2.02 dB loss per 100 feet.	$1.20 per metre.
RG-58U Thin coax per metre	80 c
PL-259.	75 c
PL-259 to suit 5D-FB.	$1.50
FF-501DX Low Pass Filter.	$41
Bumper Mounts 3-8x 24 Thread.	$10
Wide Range of Coax Cable and Connectors in stock	
MC-440 RF Speech Processor	$135
Porcelain Egg Insulators.	50 c

VALVES.

6JS6C	$12.50
6KD6	$13.00
8728	$58.00
6146B	$13.50.

TOYO. $18.

2 Position COAX Slide Switches
3.5-430 mHz.YES POST FREE!!!!



TS520S

$729

KENWOOD

TS-520S HF Transceiver ac only	$729.
TS-820S HF Digital Transceiver ac only	$1179
SP-520 Matching speaker for TS-520S	$37.50
SP-820 Matching speaker for TS-820S inc.filters.	$62
VFO-820 Matching VFO for TS-820S	$165.
VFO-520 Matching VFO for TS-520S	$147.
SM-220 Mon tor Scope Kenwood series	$319
DG-5 Digita. Display for TS-520S	$194
DS-1A DC Converter TS-520-820	$74.
DS-5 Pan Adapter for TS-520S	$60.
DS-8 Pan Adapter for TS-820S	$60.
AT-200 Matching Antenna Tuner Power meter	$174.
Optional crystal filters	$54.
MC-35S Hand Mike HI Z	$20.
MC-50 Base Mike HI and LO Z	$52.
TS-120 80-10M Mobile Digital Display 30W PEP	$TBA.

ANTENNAS

HIDAKA

HIDAKA

BANKCARD

VS-33. 3el.Triband Beam 20-15-10M. Inc.Balun.	$259.
VS-22 3el Duoband Beam 15-10M Inc. Balun	$173.
VS-41-80KR. 60-10M Trapped Vertical.	$129.
VS-RG. Radial Kit for VS-41-KR.	$35.

HY-GAIN

hygain

18-AVT 80-10 M Vertical	$129.
TH-3 Mk.3 20-15-10 M Beam	$255.
TH-3 Jr 20-15-10 M Beam	$198.
TH-6 DXX 20-15-10 M 6 EL	$329
HI-QUAD 3 El.Quad 20-15-10 M	$285
BN-86 1-1 Matching Balun	$24

Mobile Antennas.

80M Helical	$35.
40M Helical	$35
20M Helical	$35.
15M Helical	$35.
10M Helical.	$35

ALL Adjustable Tip Rod for easy SWR

Yaesu Mobile Set RSL Base and Mast plus 80,15,10M Whips. Complete. $79.
BPM. Bumper Mount (Adjustable) to suit Helicals.

ICOM

IC-701 HF 160-10M Transceiver	$1299.
IC-202E SSB Portable Transceiver	$219.
IC-22S. FM 10 Watts 2M Mobile Transceiver.	$289.
IC 211 ALL Mode 2M. Transceiver.	$730.
IC-280 Mobile 2M.Digital Transceiver	$379.
IC-701PS Power Supply.	$275.

NEW IC 280 NOW AVAILABLE

2 M.10 W Transceiver
spacing 144.148
EX-STOCK ALL Digital
Remote Computer Controlable
3 memories YES 3

OUR PRICE ONLY **$379.**

Now also available

All Australian made DUO-Band Beams -15-10 M.4 elements only $159.00

NEW!!

DUO BAND BEAM $159.
80-10 M Vertical. $109.
MADE BY AMTENNA.
SPECIALISTS IN HAM ANTENNAS.

SOLE AUSTRALIAN DISTRIBUTOR
CHIRNSIDE ELECTRONICS.
ALL AUSTRALIAN MADE TRAP BEAMS.
FOR AMATEUR BANDS.

MADE WITH LOCAL COMPONENTS.
SOLID CONSTRUCTION.
DUO BAND 15-10 M
BUILT IN AUSTRALIA.

Soon available ALL BAND trapped verticals.

DEALERS WANTED IN ALL STATES NOW.

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26 EDWARDS RD.
LILYDALE 3140.
PHONE (03)726 7353

Prices and specifications are subject to change without notice.

All prices include Sales Tax Freight and Insurance extra

THE BULLETIN

WEST AUSTRALIAN SUPPLEMENT TO " AMATEUR RADIO " NOVEMBER 1978.

PATRON : His Excellency the Governor,
Sir Wallace Kyle, G.C.B.,C.B.E.,D.S.O.,D.F.C.,K.of St., John.

PRESIDENT: Mr.L.A. Ball VK6AN.

SECRETARY: Mr. P. Savage VK6NCP.

TREASURER: Mr. A. van den Avoort VK6CU.

* * * * * * * * * * * * * * * *

BULLETIN: All material for inclusion in the Bulletin should reach the Editor by phone,(4442909) - on air, or by mail to :-
22 Salisbury St. LEEDERVILLE. 6007.
before the 10th of each month.

CORRESPONDENCE:
All other correspondence should be addressed to the
Hon. Secretary,
W.I.A. (W.A. Division)
G.P.O. Box N1002.
PERTH. W.A. 6001.

DIVISIONAL NEWS BROADCAST. VK6AWI SUNDAY Ø13Ø GMT.

80 Metres	SSB	3600	KHz.
40 Metres	SSB	7080	KHz.
20 Metres	SSB	14100	KHz + 14175 KHz.
10 Metres	SSB	28550	KHz
6 Metres	FM	52.656	MHz
2 Metres	FM	via CH 2 repeater.	

News Co - ordinator VK6JY 2931109.

GENERAL MEETING: Held on the THIRD TUESDAY of each month at SCIENCE House, 710 Murray St., West Perth.,commencing 1145 GMT.
BRING A FRIEND * PROPOSE A NEW MEMBER !

COUNCIL MEETING: Held on the FOURTH TUESDAY of each month at the Scout Hall,Cnr Joseph & Woolwich Sts, West Leederville.,1130 GMT.
Observers welcome.

The 1979 Annual Conference of the New Zealand Association of Radio Transmitters (Inc.) will be held at Upper Hutt, New Zealand,between June 1st and 4th 1979.

Overseas visitors to New Zealand are welcome to attend this conference. Registration forms are available from the Secretary, 1979 Conference Committee, P.O. Box 40-212, Upper Hutt.New Zealand.

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AMATEUR OF THE YEAR AWARD.

At the time of writing NOT A SINGLE NOMINATION has been received.NOVEMBER 30th is the deadline! ! SHAME ! SHAME !

WIRELESS INSTITUTE OF AUSTRALIA - INTRUDER WATCH SERVICE

OBSERVERS LOG SHEET MONTH.

Name & Callsign.....

Address.....

Receiver..... Aerial(s).....

DATE	TIME GMT	FREQ in KHz*	C/SIGN if Heard	MODE	RST	BEARING *	DETAILS OF TRAFFIC ANY OTHER INFORM.

* "M" =Measured.
"E" =Estimated.

DATE..... SIGNATURE.....

Please forward to your Divisional Co - ordinator Mr.D. Couch VK6WT
9 The Grove,
Wembley. 6014.

- -

Coincidence Corner.

Neil VK6FI, a keen 10 metre operator recently worked JH2NWH, actually it was on 14th Sept. at 1630 Hrs on 28580 KHz. So what ? WELL on checking his log, much to his amazement, Neil found that he had worked the Same station on the same frequency at the same hour - - FOUR YEARS AGO !

* * * * * * * * * * * * * * *

FOR SALE.

KENWOOD TR-2200G 2 metre HAND-HELD TRANSCEIVER

Complete with channels 40., 50., Repeaters 2, 4, 6, 8, plus -
Nicad batteries . . . . .$150 ono.

STAR SR 700A COMMUNICATIONS RECEIVER
covering :- 80,49,41,40,31,19,16,15,13,10 metre bands.
Triple conversion with dial having 1 KHz graduations - -
Each band covers 600 KHz. . . . . .$150 ono.

Dave Smedley,
9 Beryl St., Balcatta. 6021 . Phone 09-3492911.

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THE TEN - TEN MOVEMENT.

This sheet has been prepared by the members of the Welcome Stranger Chapter of the Ten-Ten International Net, for the information of those amateurs whose knowledge of the Ten-Ten movement may be a little hazy.

The Ten-Ten movement began some years ago in Southern California, when some amateur stations began to fear that the band might be lost to commercial and other interests. So the Ten-Ten movement began with the object of populating the ten metre band. Since that time it has grown in popularity until now it has over 20,000 members around the world.

Each member of the Ten-Ten group has a number for life, which he may pass on to any other amateur, if he wishes. If the station to whom he passes on his number is not already a member, he may save up those numbers until he has ten points, at which time he may apply for membership himself. To obtain admission and the ten points-you must work five "DX" stations at 2 points each, or ten local stations at one point each, or any combination of DX and local stations to make ten points. With sufficient points, you apply for membership to :-ZL1BEB, Peter Williams, Rd.1 Kaihere, Ngatea, New Zealand, enclosing $4 for membership and subsequent bullotins.

In your application you must quote amateurs contacted, their callsigns, Ten-Ten numbers, date and time of contact, etc. You will then receive a membership number and a certificate of membership. The world of the "Chapters" is now open to you.

Within the Ten-Ten movement there are hundreds of chapters, each with its own rules and awards. Here are some of the chapters, with their relevant information:-

The "Welcome Stranger" VK3 Chapter. This chapter was formed by Ballarat Victoria members of Ten-Ten with the aim of promoting activity on ten metres. An attractive certificate is issued to any amateur who obtains ten points from members of the Welcome Stranger Chapter. Charter - Ballarat mostly - members of the Welcome Stranger Chapter are each worth three points, while other members around the world are worth 4,2 or 1 points each. For instance W5KHN, George in Texas, is a first state Charter Member, and is worth four points - VK6NAY Rob, in Western Australia is a first stater, worth 2 points. The cost for membership and the certificate is $2 Australian, or 8 I.R.C's. There are endorsement awards for 50, 100 and 250 points in contacts. Secretary is Geoff. Smith VK3NLZ, 829 Lauri St., Mt. Pleasant, Ballarat 3350 Victoria, Australia. Awards Manager is Leo McPherson, VK3NIQ, P.O. Box 247, Ballarat East 3350 Victoria, AUSTRALIA.

The Blue Mountains Lagoon VK2 Chapter. Awards Manager, " Mac " McGrath VK2APD, 47 Mountain Lagoon Rd., Bilpin, N.S.W. 2758. Fifteen points in contacts required for entry. Certificates and endorsements with native animal motifs. Basic certificate $2 Australian.

The Flagstaff VK3 Chapter. Awards Manager, Keith Hill, VK3NCF, Box 574 P.O. Warnambool, 3280 Victoria. Fifteen points required for entry, cost $2 Australian.

The Canterbury ZL3 Chapter, and "Down Under" ZL1 Chapter. These are two very active chapters, and, due in part to their fortunate location in respect to U.S.A., have very close connections with the stateside chapters. Both these chapters have very attractive pictorial awards. The cost and requirements are similar to the others mentioned. It is particularly fortunate for the Australian Eastern States that thes two ZL chapters are there, without them life would be much more difficult especially in short skip.

Almost all of these chapters have endorsement or " Bar" awards, which can

Results for the 2nd W.A. Annual 3.5 MHz SSB Contest held on 26th and 27th September, 1978.

1.	-	VK6NAG	-	162 Points
2.	-	VK6NAR	-	116 "
3.	-	VK6NDV	-	68 "
4.	-	VK6NCQ	-	56 "
5.	-	VK6GO	-	46 "
6.	-	VK6HU	-	40 "
7.	-	VK6CR	-	29 "
8.	-	VK6DC	-	12 "

Once again Jack VK6NAG has shown us how to get in there and win, that makes two notches on your belt this year Jack - congratulations, its as well the VHF Contest isn't open to you Hi.

But what happened to all the rest of us, after all the requests for contests - where was everyone ? Above is the total number of logs received out of 33 calls participating, but what about all the others who didn't even switch on. Let's make it a big one next year and have at least 150 calls and logs,make the Contest Committee do some work for a change.

C.Waterman VK6NK.
Contest Manager.

* * * * * * * * * * * * * * * * * * *

Results of the 2nd VHF/UHF Contest held 30th September and 1st October 1978.

WHAT DID EVERYONE FORGET.

+ +

TEN - TEN continued.....

be worked for, after obtaining the basic award. Some, including Welcome Stranger Chapter,have provisions which permit the working of a station a second time,in order to achieve these additional awards. Write to the secretaries for more detailed information.

All thes awards make very attractive wall decorations and "conversation pieces "- join us !

Leo VK3NIQ.

GET THE HABIT - -PROPOSE A NEW MEMBER. THERE IS STRENGTH IN NUMBERS, ASK ANY CB er.